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BULLETIN

OF

THE AGRICULTURAL AND MECHANICAL
COLLEGE OF TEXAS

Third Series, Vol. 11.

May 1, 1925.

No. 5

THE SUMMER SESSION

JUNE 8—AUGUST 29, 1925

The College (Twelve Weeks).

The School of Cotton Classing (Six Weeks).

The Eight Weeks Course in Automobiles and Tractors.

The Short Course for Graduate Veterinarians (One Week).

The Short Course for Electric Metermen (One Week).

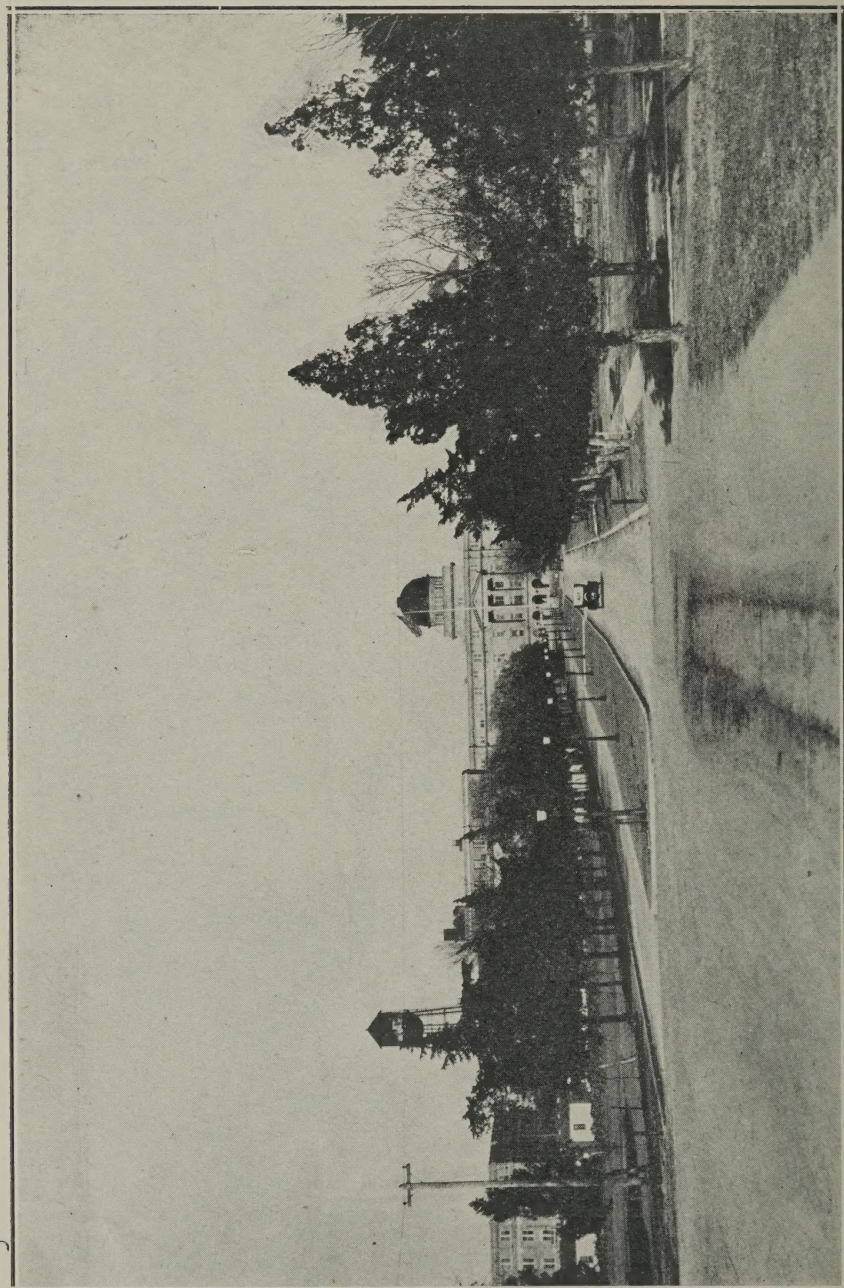


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FEB 22 1925
UNIVERSITY OF ILLINOIS

COLLEGE STATION, TEXAS

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GENERAL STATEMENT

The summer session of the Agricultural and Mechanical College of Texas has been established for the following well defined purposes:

1. To provide teachers and others who cannot attend college during the regular session an opportunity to obtain a college education.
2. To give students of the College an opportunity to shorten their college course by doing summer work.
3. To offer those qualified to pursue graduate work an opportunity for study in courses leading to the Master of Science degree.
4. To provide opportunity for professional improvement through short courses of a highly specialized character in the various trades and professions.

The summer session will begin June 8, 1925.

CALENDAR

SUMMER SESSION, 1925.

- June 8, Registration Day for the College Division, the School of Cotton Classing and the Short Course for Electric Metermen.
- June 17, First Course in Automobiles and Tractors and Short Course for Graduate Veterinarians begin.
- June 24, Second Course in Automobiles and Tractors begins.
- July 4, Holiday.
- July 18, First term of the College Division and the School of Cotton Classing closes.
- July 20, Second term of the College Division opens.
- July 27, Second Annual Conference of County Superintendents and Farmers' Short Course begins.
- July 29, Summer Session ends.

AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS

WILLIAM BENNETT BIZZELL, Ph. D., D. C. L., LL. D.,
President.

SUMMER SESSION, 1925.

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CLYDE FOSTER,
Instructor in Textile Engineering.

MRS. S. D. WEBB,
Teacher, Rural Demonstration School.

GENERAL INFORMATION.

Organization.

The work of the 1925 summer session will be given in the following five divisions:

1. The College.
2. The School of Cotton Classing.
3. The Eight Weeks Course in Automobiles and Tractors.
4. The Short Course for Graduate Veterinarians.
5. The Short Course for Electric Metermen.

Admission Requirements.

In the College Division courses will be offered subject to the same general requirements as in the regular session.

To enter the eight weeks course in automobiles and tractors the student must be sixteen or more years old, and must present a certificate from some reliable person showing that he is in good standing in his community.

There are no fixed requirements for admission to the School of Cotton Classing.

Discipline.

Every student in the summer session is expected at all times to conform to the ordinary rules of propriety and gentlemanly conduct; to be truthful; to respect the rights of others; to be punctual and regular in attendance upon all required exercises; to apply himself diligently to his studies; and to have due regard for the preservation of College property.

For improper conduct, or failure to keep up with his studies, a student may at any time be required to withdraw from the College.

Board and Room.

Students of the summer session will take their meals in the main dining hall. This hall is conveniently located with reference to dormitories, lecture rooms, and laboratories.

Room accommodations will be provided for summer session students in new modern fireproof dormitories. These buildings are modern in every respect, including screens for protection against mosquitoes and flies, sewage connection, electric lights and running water. These dormitories will be in direct charge of a summer session official, who will see that study hours are observed and that proper conditions for work are maintained.

The cost of room and board for the six weeks term will be \$48.00. This does not include laundry. Bed linen, pillows and towels will be furnished by the student. All beds are single.

Location.

The Agricultural and Mechanical College of Texas is located at College Station on the Houston and Texas Central Railroad, and on the Fort Worth division of the International and Great Northern Railroad, ninety-two miles north of Houston. Both railroads run through the College grounds. The stations are only a short distance from the Academic building. At College Station there are express, telegraph and money order offices.

College Facilities.

All the educational facilities of the College will be placed at the disposal of the students of the summer session. The College plant consists of thirty-seven brick buildings. Ten of these are used for dormitories and twenty-seven for purposes of instruction. All buildings used for instruction are well equipped with laboratories. The Horticultural gardens, Agronomy plots, and greenhouses, are conveniently located, and form a part of the outside facilities for instruction.

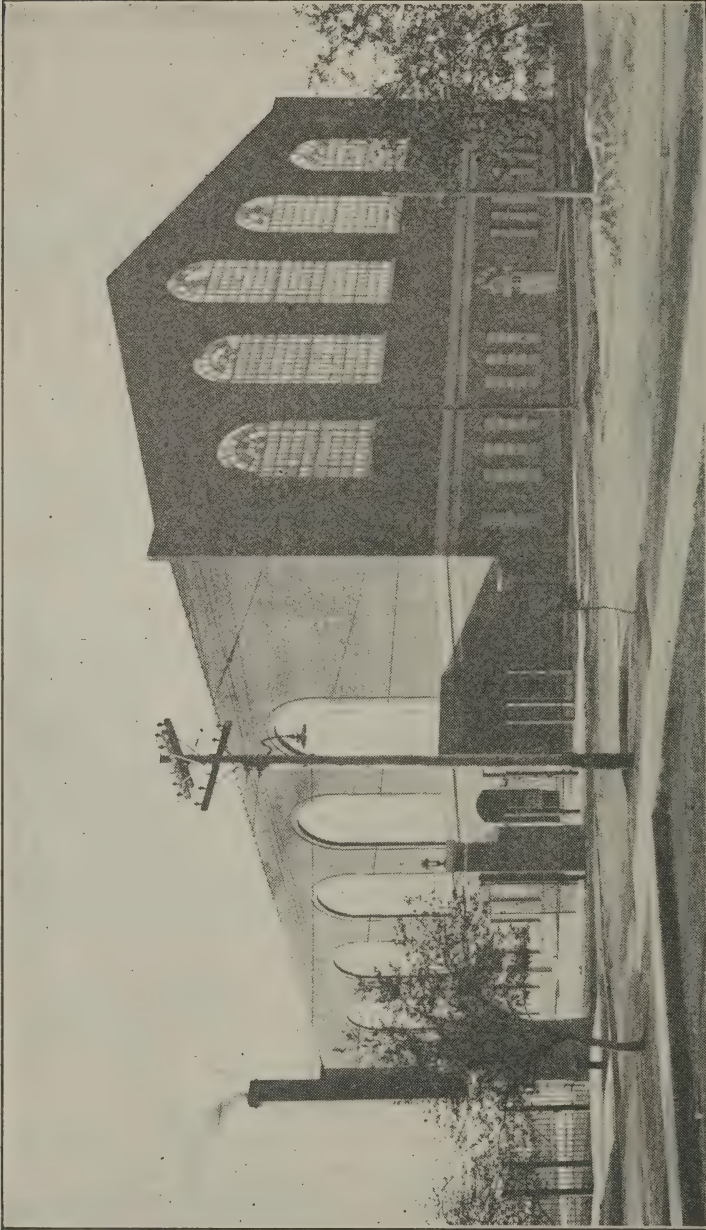
The library of the College consists of a general library and several departmental libraries. The general library is housed in the Academic building and consists of about 20,000 volumes devoted to general literature and reference work. All the leading magazines and a number of daily papers are received at the library. All College departments have well-selected technical libraries for the use of students interested in special subjects. The general library will be open during the summer session on week days from 9 a. m. until 5 p. m.

The College Exchange Store, located on the first floor of the Academic building, will carry a complete line of text-books, reference books, stationery and general supplies needed by summer session students.

The modern, well-equipped College Hospital will be kept open during the entire summer session and the College physician and nurse will be on duty to serve the needs of summer session students.

Rural Demonstration School.

Without doubt the most difficult teaching job is that of conducting a one-teacher school of seven grades. The poorest teachers are usually found in such positions because the better teachers are accepted in larger schools. A one-teacher school of seven grades will be conducted on the College campus so that teachers may observe the organization, daily program, and equipment necessary. The teacher who will conduct this school is a rural school



THE NEW GYMNASIUM

teacher, but has had special training for this particular problem. Students who are preparing to teach, and teachers who want to get a new vision of the possibilities of the one-room school, will do well to attend the summer session.

Public Lectures.

Lectures on pedagogical, sociological, and agricultural subjects will be given by the members of the teaching staff and by others invited for this purpose.

On each Sunday morning a regular Bible School will be conducted at the College and religious services will be conducted in the College Chapel by visiting ministers.

Entertainment.

Two motion picture shows will be given each week. An open air theatre has been provided for all picture shows and other evening entertainments. The Y. M. C. A. will be open all summer and a number of social gatherings will be held in the lobby of this building. The large swimming pool in the basement of the Y. M. C. A. building will be available for the use of the summer session students during the entire session. The instructor in athletics will give lessons in swimming to those who desire them. Outdoor sports will be encouraged. The summer session is a member of a small baseball league and games are played with local teams.

Expenses.

For Students in the College Division:

Incidental fee	\$10.00
Medical fee	2.50
Room and board per term of six weeks.....	48.00

For the Eight Weeks' Course in Automobiles and

Tractors:

Incidental fee	10.00
Medical fee	2.50
Room and board for term of eight weeks.....	64.00
Laboratory fee	50.00

For the School of Cotton Classing:

Laboratory fee	25.00
Medical fee	2.50
Room and board per term for six weeks.....	48.00

The expenses for the Short Course for Graduate Veterinarians are listed on page 33.

Each student in the summer session, except those in the Short Courses for Graduate Veterinarians and Electric Metermen will be required to deposit a trust fund to cover breakage of laboratory material or damage to College property. The amount

of this deposit is \$10.00 for students taking the eight weeks course in Automobiles and Tractors, and \$5.00 for all other students. The unused portion of this will be refunded by mail as soon after the close of the summer session as the fund can be checked up.

A key deposit of \$1.00 will be required of all students who room in the dormitories. This will be refunded to the student on leaving College, provided he returns his key to the Commandant's office. Students who do not room in the dormitories will not be required to pay the medical fee, nor will they be required to make a key deposit.

A student once entering the summer session for a term and having paid for that term or the balance of it, forfeits all claim to said payment in case of voluntary withdrawal from the College before the expiration of said term, except in case of sickness disqualifying him for the discharge of his duties for the rest of the term. When such sickness takes place at the College, it must be attested by the College Surgeon before the student can receive the balance of his maintenance fund. No refund on maintenance is allowed in cases where the students leave the College for the week-end only.

How to Register.

1. Report to Registration Desks in Lobby of the Academic Building, and fill out Registration card.
2. Report to the Business Manager, Room 120, first floor Academic building, and pay your fees. The Business Manager will give you a receipt, and a meal ticket.
3. Report to the Commandant, Room 101, first floor Academic building, for assignment to room.
4. Report to the Registrar, Room 212, second floor Academic building.
5. Report to the Director of the Summer Session, Room 210, second floor, for the approval of your program.
6. Report promptly to all classes, as per the official schedules.
7. If further information is needed consult the Registrar, or the Director of the Summer Session.

All official notices concerning the Summer Session will be posted on bulletin boards Nos. 5 and 6, first floor Academic building.

All inquiries relative to the Summer Session should be addressed to the Director of the Summer Session, or the Registrar College Station, Texas.

THE COLLEGE.

(June 8 to August 29).

All courses in this division carry college credit and are open only to those who have had the prerequisite training. The work will be given in two terms of six weeks each. The first term will begin June 8 and will end July 18. The second term will begin July 20 and will end August 29.

The maximum amount of work a student may carry in a six weeks term is the equivalent of eight term hours, except in the case of men who have had approved teaching experience; with the consent of the Director of the Summer Session such men may carry the equivalent of nine term hours. All rules of the regular session apply to the Summer Session in the matters of prerequisites, grades, examinations and class absences. Three cases of tardiness to class will be counted as one absence.

All work in the Summer Session must be taken in accordance with the published schedule.

The last day on which a student may complete his registration for work in the College Division is Wednesday of the first week of each term. All students, except those registering for the first time, who do not complete their registration on the first day of each term will be charged a fee of five dollars for late registration. For sufficient reason, students entering on the second day of each term may be excused from paying the late registration fee.

The right is reserved to withdraw any course for which less than five students register.

COURSES OF INSTRUCTION BY DEPARTMENTS.

For a description of the courses listed below, see the College catalogue for the regular session. This catalogue may be obtained from the Registrar.

(First Term June 8 to July 18).

Agricultural Economics.

201S. Principles of Accounting. (3-10)¹ [3]²
M., W., F. 9:30; Daily except S., 2:30 to 5:25.

¹The numbers enclosed in parenthesis denote clock hours per week devoted to theory and practice.

²The numbers in brackets indicate credit in term hours.

- 202S. Principles of Accounting. (3-10) [3]
M., W., F. 7:30; Daily except S., 10:30 to 12:25.
- 312S. Agricultural Economics. (5-5) [3]
Daily except S., 11:30; M. 2:30 to 5:25, W. 2:20 to 4:25.
- 411S. Agricultural Economics. (5-5) [3]
Daily except S., 11:30; M. 2:30 to 5:25, W. 2:30 to 4:25.
- 421S. Farm Management. (5-10) [4]
Daily except S. 8:30 and 3:30 to 5:25.

Agricultural Education.

- 308S. Educational Psychology. Daily 10:30. (6-0) [3]
- 402S. Teaching Vocational Agriculture. (6-0) [3]
Daily 8:30.

Agricultural Engineering.

(See announcement of special course in automobiles and
 tors, pages 27 to 30.

Agronomy.

- 105S. The Fundamentals of Crop Production. (6-5) [4]
Daily 9:30; M. 2:30 to 5:25; S. 7:30 to 9:25.
- 301S. Soils (6-5) [4]
 Prerequisite: Chemistry 101, 102.
Daily 7:30; T. 1:30 to 4:25; Th. 1:30 to 3:25.
 Laboratory fee, 50 cents.

Animal Husbandry.

- 101S. Judging Market Types (Cattle and
 Sheep) (0-10) [2]
Daily except S. 3:30 to 5:25.
- 102S. Judging Market Types (Horses and
 Swine). (0-10) [2]
Daily except S. 7:30 to 9:25.
- 202S. The Breeds of Farm Animals. (5-5) [3]
 Prerequisite: Animal Husbandry 101, 102.
Daily except S. 7:30; F. 10:30 to 12:25; S. 9:30 to 12:25.

Biology.

- 101S. General Botany. (5-10) [4]
Daily except S. 8:30 and 1:30 to 3:25.
 Laboratory fee, 50 cents.

- 207S. General Zoology. (5-10) [4]
Daily except S. 11:30 and 1:30 to 3:25.
 Laboratory fee, \$1.00.

Chemistry and Chemical Engineering.

- 101S. General Inorganic Chemistry. (6-8) [4½]
Section 1. Daily 9:30; M., W. 1:30 to 5:25.
Section 2. Daily 11:30; T., Th. 1:30 to 5:25.
Section 3. Daily 8:30; M., T., W., Th. 10:30 to 12:25.
 Laboratory fee \$3.50.
- 206S. Organic Chemistry. (6-5) [4]
 Prerequisite: Chemistry 101, 102.
Daily 9:30; F. 2:30 to 5:25; S. 10:30 to 12:25.
 Laboratory fee, \$2.50.

Dairy Husbandry.

- 101S. Judging Dairy Cattle. (0-5) [1]
W. 2:30 to 4:25; F. 2:30 to 5:25.
- 202S. Dairying. (5-5) [3]
Daily except S. 9:30; F. 3:30 to 5:25; S. 7:30 to 10:25.
 Laboratory fee, 75 cents.

Drawing.

- 101S. Mechanical Drawing. (0-5) [1]
M. 1:30 to 3:25; W. 1:30 to 4:25.
- 103S. Descriptive Geometry. (6-0) [3]
Daily 7:30.
- 104S. Descriptive Geometry. (5-5) [3]
Daily except S. 11:30; T. 1:30 to 3:25; Th. 1:30 to 4:25.
- 108S. Mechanical Drawing. (0-5) [1]
 Prerequisite: Drawing 101.
M. 1:30 to 3:25; W. 1:30 to 4:25.
- 201S. Mechanical Drawing. (0-5) [1]
 Prerequisite: Drawing 101.
T. 1:30 to 3:25; W. 1:30 to 4:25.
- 202S. Mechanical Drawing. (0-5) [1]
 Prerequisite: Drawing 101.
M. 1:30 to 3:25; W. 1:30 to 4:25.
- 222S. Mechanical Drawing. (0-8) [1½]
M., T., W., Th. 1:30 to 3:25.

Economics.

- 306S. Principles of Economics. (8-0) [3]
Daily 8:30; F., S. 11:30.
- 316S. Business Law. (6-0) [3]
Daily 9:30.

Electrical Engineering.

- 201S. Electricity and Magnetism. (8-10) [6]
 Prerequisite: Mathematics 102, 103, 104.
Daily 8:30; Daily, except S. 1:30 to 3:25.
 Laboratory fee, 75 cents.
- 307S. Electrical Machinery. (6-0) [3]
 Prerequisite: Physics 204, Mathematics 204.
Daily 7:30.

English.

- 103S. Rhetoric and Composition. (6-0) [3]
Daily 9:30.
- 203S. English Composition. (5-0) [2]
 Prerequisite: English 103, 104, or 105, 106.
Daily except S. 9:30.
- 231S. English Literature. (6-0) [3]
Daily 11:30.
- 303S. Argumentation. (5-0) [2]
 Prerequisite: English 203, 204.
Daily except S. 10:30.

Entomology.

- 201S. General Entomology. (5-5) [3]
Daily except S. 10:30; F. 1:30 to 3:25; S. 7:30 to 10:25.
 Laboratory fee, 75 cents.
- 202S. Economic Entomology. (5-5) [3]
Daily except S. 11:30; M. 2:30 to 4:25; W. 2:30 to 3:25.
 Laboratory fee, 50 cents.
- 304S. Apiculture (Elementary). (5-5) [3]
Daily except S. 8:30; T. 1:30 to 3:25; Th. 1:30 to 4:25.
 Laboratory fee, 50 cents.

Genetics.

- 301S. Genetics. (6-5) [4]
 Prerequisite: Biology 101, 207.
Daily 7:30; W. 1:30 to 3:25; F. 1:30 to 4:25.
 Laboratory fee, 50 cents.

History.

- 101S. The Development of Western Europe. (6-0) [3]
Daily 8:30.
- 211S. History of Constitutional Government. (6-0) [3]
Daily 10:30.
 (History 211 or 212 may be offered as substitutes for history 305 or 306).
- 311S. Modern and Contemporary European History. (6-0) [3]
Daily 7:30.

Horticulture.

- 201S. Plant Propagation and Orcharding. (5-5) [3]
 Prerequisite: Biology 101, 102.
Daily except S. 10:30; M. 1:30 to 3:25; W. 1:30 to 4:25.
 Laboratory fee, 75 cents.
- 307S. Elementary Landscape Design. (5-5) [3]
Daily except S. 9:30; T. 1:30 to 4:25; Th. 1:30 to 3:25.

Industrial Education.

- 302S. Lesson Planning. (5-5) [3]
Daily except S. 8:30; W. 1:30 to 4:25; F. 1:30 to 3:25.
- 303S. Psychology Applied to Industry. (6-0) [3]
Daily 10:30.
- 305S. Organization of Industrial and Related Courses. (5-5) [3]
Daily except S. 7:30; T. 1:30 to 4:25; Th. 1:30 to 3:25.

Mathematics.

- 101S. Algebra. (6-0) [3]
Daily 7:30.
- 102S. Algebra. (6-0) [3]
Daily 10:30.
- 103S. Plane Trigonometry. (6-0) [3]
Daily 8:30.
- 104S. Analytics. (6-0) [3]
 Prerequisite: Mathematics 101, 103.
Daily 9:30.
- 203S. Calculus. (6-0) [5]
 Prerequisite: Mathematics 104.
Daily 10:30.

- 204S. Calculus. (6-0) [5]
 Prerequisite: Mathematics 104.
Daily 7:30.

Mechanical Engineering.

- 103S. Woodshop. (0-8) [1½]
M., W., F. 1:30 to 4:25.
 Laboratory fee, \$1.50.
- 214S. Machine Shop Practice. (0-8) [1½]
M., W., F. 1:30 to 4:25.
 Laboratory fee, \$1.50.
- 309S. Machine Shop. (0-8) [1½]
 Prerequisite: Mechanical Engineering 104.
M., W., F. 1:30 to 4:25.
 Laboratory fee, \$1.50.
- 310S. Machine Shop. (0-8) [1½]
T., Th. 1:30 to 5:25.
 Laboratory fee, \$1.50.

Modern Languages.

- 311S. French. (6-0) [3]
Daily 9:30.
- 315S. Spanish. (6-0) [3]
Daily 8:30.

Physics.

- 203S. General. (6-8) [4½]
 Prerequisite: Mathematics 101, 103.
Daily 7:30; M., T., W., Th. 3:30 to 5:25.
 Laboratory fee, \$1.00.
- 204S. General. (6-8) [4½]
 Prerequisite: Mathematics 101, 103.
Daily 10:30; M., T., W., Th. 3:30 to 5:25.
 Laboratory fee, \$1.00.

Physical Education.

- 311S. Athletic Coaching. (6-5) [4]
 A course in the theory and practice of
 athletic coaching.
Daily 8:30; T. 2:30 to 5:25; Th. 2:30 to 4:25.

Poultry Husbandry.

- 201S. Farm Poultry. (5-5) [3]
Daily except S. 8:30; T. 2:30 to 5:25; Th. 3:0 to 5:25.

- 401S. Poultry Management. (5-5) [3]
 Prerequisite: Poultry Husbandry 201.
Daily except S. 10:30; M. 2:30 to 5:25; W. 3:30 to 5:25.

Rural Education.

- 121S. Elementary School Methods. (6-5) [4]
Daily 7:30. Daily except S. 9:30.
- 221S. Rural School Management. (6-0) [3]
Daily 8:30.
- 321S. Secondary School Methods. (6-5) [4]
Daily 8:30. Conference hours to be arranged.

Rural Sociology.

- 312S. General Sociology. (6-0) [3]
Daily 11:30.
- 407S. Rural Sociology. (5-5) [3]
Daily except S. 9:30; T. 1:30 to 4:25 Th. 1:30 to 3:25.

Textile Engineering.

- 101S. Cotton Classing. (0-5) [1]
Daily except S. 1:30 to 2:25.

Veterinary Anatomy.

- 306S. Animal Diseases. (6-5) [4]
Daily 7:30; T. 1:30 to 4:25; Th. 1:30 to 3:25.

Veterinary Medicine and Surgery

- 351S. Non-Infectious Diseases. (6-0) [3]
Daily 9:30.
- 371S. Clinics. (0-18) [3½]
Daily except S. 1:30; S. 7:30.
- 455S. Poultry Diseases. (5-0) [2]
Daily except S. 8:30.

Graduate Courses.

For the rules and regulations governing graduate work the student is referred to the Catalogue of the regular session. The following graduate courses will be available during the first term of the 1925 Summer Session:

- Agricultural Economics 501S, Advanced Marketing Problems. (4-10) [4]
- Agricultural Economics 503S, Land Problems and Land Policies. (4-10) [4]

Agricultural Education 501S, 502S, Agricultural Education.	(4-10)	[4]
Agronomy 501S, 502S, Advanced Farm Crops.	(4-10)	[4]
Agronomy 505S, 506S, Advanced Soils.	(4-10)	[4]
Dairy Husbandry 501S, Advanced Dairy Husbandry.	(4-10)	[4]
Entomology 501S, Research Entomology.	(4-10)	[4]
Entomology 507S, Economic Entomology.	(4-10)	[4]
Genetics 501S, 502S, Advanced Plant Genetics.	(4-10)	[4]
Industrial Education 501S, 502S, Industrial Instruction.	(4-10)	[4]
Industrial Education 503S, 504S, Industrial Education Administration.	(4-10)	[4]
Poultry Husbandry 501S, 502S, Research Poultry Husbandry.	(4-10)	[4]
Rural Education 501S, 502S, Problems in Rural Education.	(4-10)	[4]
Rural Sociology, 521S, Community Building.	(4-10)	[4]
Veterinary Physiology 502S, Advanced Practical Physiology.	(4-10)	[4]

(Second Term July 20 to August 29.)

Agricultural Economics.

305S. Statistical Method.	(5-10)	[4]
<i>Daily except S. 8:30; Daily except S. 3:30 to 5:25.</i>		
401S. Marketing.	(6-0)	[3]
<i>Daily 10:30.</i>		

Agricultural Education.

202S. Psychology.	(6-0)	[3]
<i>Daily 8:30.</i>		
305S. Principles of Education.	(6-0)	[3]
<i>Daily 10:30.</i>		

Agronomy.

308S. Forage Crops.	(5-5)	[3]
<i>Daily except S. 7:30; Th. 1:30 to 3:25; S. 9:30 to 12:25.</i>		
Laboratory fee, 50 cents.		

Animal Husbandry.

303S. Animal Nutrition.	(6-5)	[4]
Prerequisite: Chemistry 206.		
<i>Daily 9:30; T. 1:30 to 4:25; Th. 1:30 to 3:25.</i>		

Biology.

- 102S. General Botany. (5-10) [4]
Daily except S. 8:30; Daily except S. 1:30 to 3:25.
 Laboratory fee, 50 cents.

Chemistry and Chemical Engineering.

- 102S. General Inorganic Chemistry. (6-8) [4½]
Section 1, Daily 9:30; M., W. 1:30 to 5:25.
Section 2, Daily 11:30; T., Th. 1:30 to 5:25.
Section 3, Daily 8:30; M., T., W., Th. 10:30 to 12:25.
 Laboratory fee, \$3.50.
- 309S. Agricultural Chemistry. (6-8) [4½]
 Prerequisite: Chemistry 206.
Daily 9:30; M., T., W., Th. 3:30 to 5:25.
 Laboratory fee, \$3.00.

Civil Engineering.

- 204S. Analytical Mechanics. (10-0) [4]
 Prerequisite: Mathematics 203; to be accompanied by Mathematics 204.
Daily except S. 8:30 to 10:25.

Drawing.

- 101S. Mechanical Drawing. (0-5) [1]
M. 1:30 to 4:25; W. 1:30 to 3:25.
- 103S. Descriptive Geometry. (6-0) [3]
Daily 9:30.
- 104S. Descriptive Geometry. (5-5) [3]
Daily except S. 11:30; T. 1:30 to 4:25; Th. 1:30 to 3:25.
- 108S. Mechanical Drawing. (0-5) [1]
 Prerequisite: Drawing 101.
M. 1:30 to 4:25; W. 1:30 to 3:25.
- 201S. Mechanical Drawing. (0-5) [1]
 Prerequisite: Drawing 101.
M. 1:30 to 4:25; W. 1:30 to 3:25.
- 202S. Mechanical Drawing. (0-5) [1]
 Prerequisite: Drawing 101.
M. 1:30 to 4:25; W. 1:30 to 3:25.
- 222S. Mechanical Drawing. (0-8) [1½]
M., T., W., Th. 1:30 to 3:25.

Economics.

- 203S. Principles of Economics. (6-0) [3]
Daily 11:30.
- 306S. Principles of Economics. (6-0) [3]
Daily 8:30.
- 311S. Money and Banking. (6-0) [3]
 Prerequisite: Economics 204, 305, 306 or 403.
Daily 10:30.

Electrical Engineering.

- 202S. Elementary Electrical Engineering. (5-10) [4]
 Prerequisite: Electrical Engineering 201; Mathematics 104.
Daily except S. 8:30 and 1:30 to 3:25.
 Laboratory fee, 75 cents.
- 308S. Electrical Machinery. (5-8) [3½]
 Prerequisite: Physics 204, Mathematics 204.
Daily except S. 9:30; M., T., W., Th. 3:30 to 5:25.
 Laboratory fee, \$1.00.

English.

- 104S. Rhetoric and Composition. (6-0) [3]
Daily 9:30.
- 204S. English Composition. (5-0) [2]
 Prerequisite: English 103, 104 or 105, 106.
Daily except S. 9:30.
- 232S. English Literature. (6-0) [3]
Daily 11:30.
- 304S. Argumentation. (5-0) [2]
 Prerequisite: English 203, 204.
Daily except S. 10:30.

History.

- 102S. The Development of Western Europe. (6-0) [3]
Daily 8:30.
- 212S. History of Constitutional Government. (6-0) [3]
 (History 211 or 212 may be offered as substitute for History 305 or 306).
Daily 10:30.
- 312S. Modern and Contemporary European History. (6-0) [3]
Daily 7:30.

Horticulture.

- 202S. Vegetable Gardening. (5-5) [3]
Daily except S. 10:30; M. 2:30 to 4:25; W. 2:30 to 5:25.
 Laboratory fee, 75 cents.
- 303S. Principles of Fruit Production. (6-5) [4]
 Prerequisite: Horticulture 201.
Daily 7:30; T. 2:30 to 4:25; Th. 2:30 to 3:25.
 Laboratory fee, \$1.00.

Industrial Education.

- 202S. Vocational Job Analysis. (6-0) [3]
Daily 7:30.
- 304S. Training and Supervising Workers in
 Industrial Plants. (6-0) [3]
Daily 8:30.
- 306S. Educational and Vocational Guidance. (6-0) [3]
Daily 10:30.
- 402S. Administration and Supervision of In-
 dustrial Education. (6-0) [3]
Daily 9:30.

Mathematics.

- 102S. Algebra. (6-0) [3]
Daily 7:30.
- 104S. Analysis. (6-0) [3]
 Prerequisite: Mathematics 101, 103.
Daily 10:30.
- 204S. Calculus. (6-0) [5]
 Prerequisite: Mathematics 104.
Daily 11:30.

Modern Languages.

- 312S. French. (6-0) [3]
Daily 9:30.
- 316S. Spanish. (6-0) [3]
Daily 8:30.

Poultry Husbandry.

- 302S. Feeding and Brooding Poultry. (6-5) [4]
Daily 10:30; M. 1:30 to 3:25; W. 1:30 to 4:25.
- 403S. Judging Poultry. (5-5) [3]
Daily except S. 8:30; T. 1:30 to 3:25; Th. 1:30 to 4:25.

Rural Education.

- 122S. Elementary School Methods. (6-5) [4]
Daily 7:30; Daily except S. 9:30.
- 222S. Rural School Management. (6-0) [3]
Daily 8:30.
- 322S. Secondary School Administration. (6-5) [4]
Daily 8:30.- Conference hours to be arranged.

Rural Sociology.

- 202S. Social Evolution. (6-0) [3]
Daily 7:30.
- 410S. Leadership and Community Planning. (2-12) [3]
 Prerequisite: Rural Sociology 407 must precede or accompany this course.
M., W. 10:30; M., T., W., Th. 1:30 to 4:25.

Veterinary Medicine and Surgery.

- 372S. Clinics. (0-32) [6]
M., T., W., Th. 7:30; Daily except S. 1:30 to 5:25.

Graduate Courses.

The following graduate courses will be available during the second term of the Summer Session:

- Agricultural Education 501S, 502S, Agricultural Education. (4-10) [4]
- Genetics 501S, 502S, Advanced Plant Genetics (4-10) [4]
- Industrial Education 501S, 502S, Industrial Instruction. (4-10) [4]
- Poultry Husbandry 501S, 502S, Research Poultry Husbandry. (4-10) [4]
- Rural Education 501S, 502S, Problems in Rural Education. (4-10) [4]
- Rural Sociology 505S, Social Legislation. (4-10) [4]

EIGHT WEEK'S COURSE IN AUTOMOBILES AND TRACTORS.

(June 17 to August 11 and June 24 to August 18.)

GENERAL STATEMENT.

The Eight Weeks' Automobile and Tractor Course offered by the Agricultural Engineering Department of the Agricultural and Mechanical College of Texas has been established for the following well-defined purposes:

1. To provide the power farmer an opportunity to increase his knowledge of the gas engine, tractor and automobile by systematic study, thus enabling him to obtain maximum efficiency at minimum expense.

2. To give the boy or man wishing to enter the automotive industry as a manager, salesman, demonstrator or mechanic, a short course in the fundamental mechanics of that industry.

3. To afford the general public interested in automotive mechanics an opportunity to get a short course in this subject.

From all sources the demand is the same—a better understanding of the fundamentals of gas engine construction and operation. The college, in putting on this course, has tried to give these fundamentals in as near a non-technical way as possible, so the work can be readily understood by those taking the course who are not well trained in the underlying sciences.

The work is carried on in the class room as well as the shop. Our long experience in giving courses of this nature has demonstrated the value of giving some class room work as well as shop work. So the students spend from one to two hours per day in the class room hearing lectures or reciting on the work studied the night before. Five to six hours per day are spent in actual shop work where the student gets the opportunity to practice what he has been taught in class. The emphasis is laid on the practical side of the work but the "how and why" things should be done thus and so, are fully explained and demonstrated.

Outline of Course.

The Automobile and Tractor Course is divided into eight parts of one week each and so arranged that each succeeding week carries the student further along in the study of auto-mechanics. The work of each week has been very carefully outlined and such work that is not essential has been eliminated, leaving only material of vital importance in the course. Following is given a brief outline of what is given in each week's work.

Metal Working Department.

In the metal working department the making of various parts of automobiles and tractors out of iron, steel, brass, aluminum, etc., is taken up as well as the repairing of these same pieces. The making of such special tools as a mechanic may need is also considered and the student gets first-hand information by making cold chisels, punches, offset screw drivers, etc. The tempering of these tools is an important factor and the student is required to see that the tools he makes are properly tempered.

Soldering of various metals is done by the student in his laboratory work. Welding not only with the open fire is given but also with oxygen-acetylene torch.

Chassis Department.

The work in the chassis department consists in getting familiar with the different parts of the chassis of automobiles and tractors, such as the wheels, springs, differential, frame, transmission, clutch, etc. The student studies the various types of these different parts and gets not only familiar with what they look like but also their repair and adjustment.

Gas Engine Department.

The work in the gas engine department is for the purpose of getting the student familiar with the single cylinder gas engine such as is found on the farm. No course in auto-mechanics would be complete without having had work in this vital department. While the theory underlying the operation of these engines is the same as any other gas engine, it is essential that the student become familiar with the practical application of these theories. The work of this department takes up in detail the various methods of cooling, governing, igniting and mixing the gas as found on farm gas engines.

Motor Department.

In the motor department the student is taught the construction, care, and operation of multiple cylinder engines. He not only is taught how to properly operate the multiple cylinder, but also to properly overhaul four, six, and eight cylinder engines under expert supervision. In overhauling these motors the student becomes familiar with the different parts of the motor and how they are put together, and in addition learns how to properly grind a valve; pour, scrape and fit a bearing; fit a piston with piston rings; and time valves.

Electrical Department.

In the electrical department the student studies ignition, which is the principle of electricity as applied to the ignition of

the internal combustion engine. He spends two weeks in this department, the first week of which is taken up with a study of elementary electricity and its application of coils, magnetos, distributors, spark plugs; all of which are found on ignition systems autos and trucks. Special attention is given to the magneto; its operation, care, and repair. During the second week in this department the student takes up work along the same line as that given in the previous week with special emphasis being placed on the details of ignition timing. Starting and lighting systems connected to the ignition system of various standard makes are arranged on special stands which allow the student to see just the electrical part of the car.

Tractor Department.

The work of the tractor department takes up the difference in design, methods of operation and construction, together with the care and repair of the various makes and sizes of tractors on the market today. The student gets an opportunity to operate the various tractors found in the laboratory.

Trouble Shooting Department.

The work in the trouble shooting department gives the student an opportunity to use all the information and skill that he has gained in the previous weeks by solving motor troubles. Here the instructor puts the motor in trouble by causing to occur some irregularity which is liable to happen under ordinary conditions. It is the student's problem to discover the cause of the trouble and to remedy it. He thus becomes familiar with the troubles to be found in motors.

When Courses Start.

Courses start June 17 and 24.

Who May Enter Course.

In order to enter this course the student must be sixteen or more years old, and must present a certificate from some reliable person showing that he is in good standing in his community.

Cost of Course.

<i>Incidental Fee</i>	\$ 10.00
For sundry expenses, such as printed forms, examination books, etc.	
<i>Medical Fee</i>	2.50
For the services of the College Surgeon and Hospital Staff who are at the service of the student.	
<i>Maintenance Fee</i>	64.00
For board, fuel, laundry, light, room rent, beadstead, mattress, table and chair.	

Laboratory and Instruction Fee..... 50.00
For cost of instruction.

Total.....\$126.50
Trust Fund\$ 10.00

This trust fund is required of each student as a deposit for his books and tools. It is refunded to him after the completion of the course if the books and tools are returned.

CERTIFICATE.

If the student's work is satisfactory, he is given a certificate showing that this is the case. These certificates are granted only to those who pass and complete the course.

THE SCHOOL OF COTTON CLASSING.

(June 8 to July 18.)

The object of the School of Cotton Classing is to prepare young men for cotton buying and the managing of cotton warehouses, and to offer to farmers the opportunity of increasing their knowledge of the leading farm product of Texas.

A study is made of the elements which determine the commercial grades of cotton; the influence which affects the price of cotton; the system of financing the crop from the field to factory, and the relation of exchanges to the business in general. Each class is furnished with new samples for practice and the work is patterned after that of a cotton office. The samples used in the Summer School are obtained from the cotton states west of the Mississippi River and an effort is made to familiarize the student with the different characteristics of cotton grown in the southwest.

Special attention will be paid to the staple of cotton, and experts in this branch will give instruction in this subject. Many samples of various lengths of staple will be provided for students taking up this line of work.

The government standards for classing cotton, which have been adopted by all the exchanges, will be used.

The announcement giving complete details relative to the work of this division will be ready for distribution April 1, 1925, and can be secured by addressing Professor J. B. Bagley, College Station, Texas.

COUNTY SUPERINTENDENT'S CONFERENCE.

(July 27 to 31.)

This conference is a week of intensive training for the county superintendent who is actually on the job. The sessions are in the form of round table, informal discussions of problems of supervision and administration. Every county superintendent in the State is invited to attend and take part in the discussions. Others who are interested in the problems of rural education are invited. The conference is sponsored by the Department of Rural Education.



A Group of Leaders in Rural Education at the 1924 County Superintendents' Conference

SHORT COURSE FOR GRADUATE VETERINARIANS.

(June 17 to 20.)

This course is planned to provide opportunities for veterinarians to become more familiar with problems which their particular line of work or kind of practice up to this time, has not presented.

Some of the newer and more dependable methods of diagnosis will be considered.

Character of Work.

Lectures, practice periods, laboratory work and clinics will be offered in poultry diseases, practical microscopy, diseases of small animals, diseases of the reproductive organs, animal breeding feeds and feeding, medicine and surgery.

Entertainment.

The evenings will be used for round table discussions, moving pictures of an educational and entertaining nature, and lectures. Ample facilities for bathing, playing tennis, and golf are available.

Expenses.

The only charges for this course are for board and room. Meals will be provided for \$1.25 a day and a charge of fifty cents a day will be made for lodging.

The State Veterinary Medical Association of Texas will hold its fifteenth annual meeting at College Station, June 16 and 17.

SHORT COURSES FOR PUBLIC UTILITY MEN.

(June 8 to 13.)

The object of this group of courses is to give intensive instruction for those engaged in certain departments of public utility organizations. The courses are intended to supplement the practical experience of men already working with utilities but who feel the need of a better understanding of the principles underlying their work in order that they may become more efficient.

On account of the brief time available, it is expected that the student will have had some practical experience before he enters upon the course. Instruction is given in the form of lectures, demonstrations and individual laboratory work.

Four courses are offered:

1. Elementary Electric Meters.
2. Advanced Electric Meters.
3. Electric Distribution.
4. Gas Meters.

A more detailed announcement will be issued about April 1st, and may be obtained by addressing Dean F. C. Bolton, College Station, Texas.

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BULLETIN
OF
THE AGRICULTURAL AND MECHANICAL
COLLEGE OF TEXAS

Third Series, Vol. 9.

December 1, 1923.

No. 12

THE SUMMER SESSION
JUNE 9—AUGUST 30, 1924

The College (Twelve Weeks).

The School of Cotton Classing (Six Weeks).

The Eight Weeks Course in Automobiles and Tractors.

The Short Course for Graduate Veterinarians (One Week).

The Short Course for Electric Metermen (One Week).



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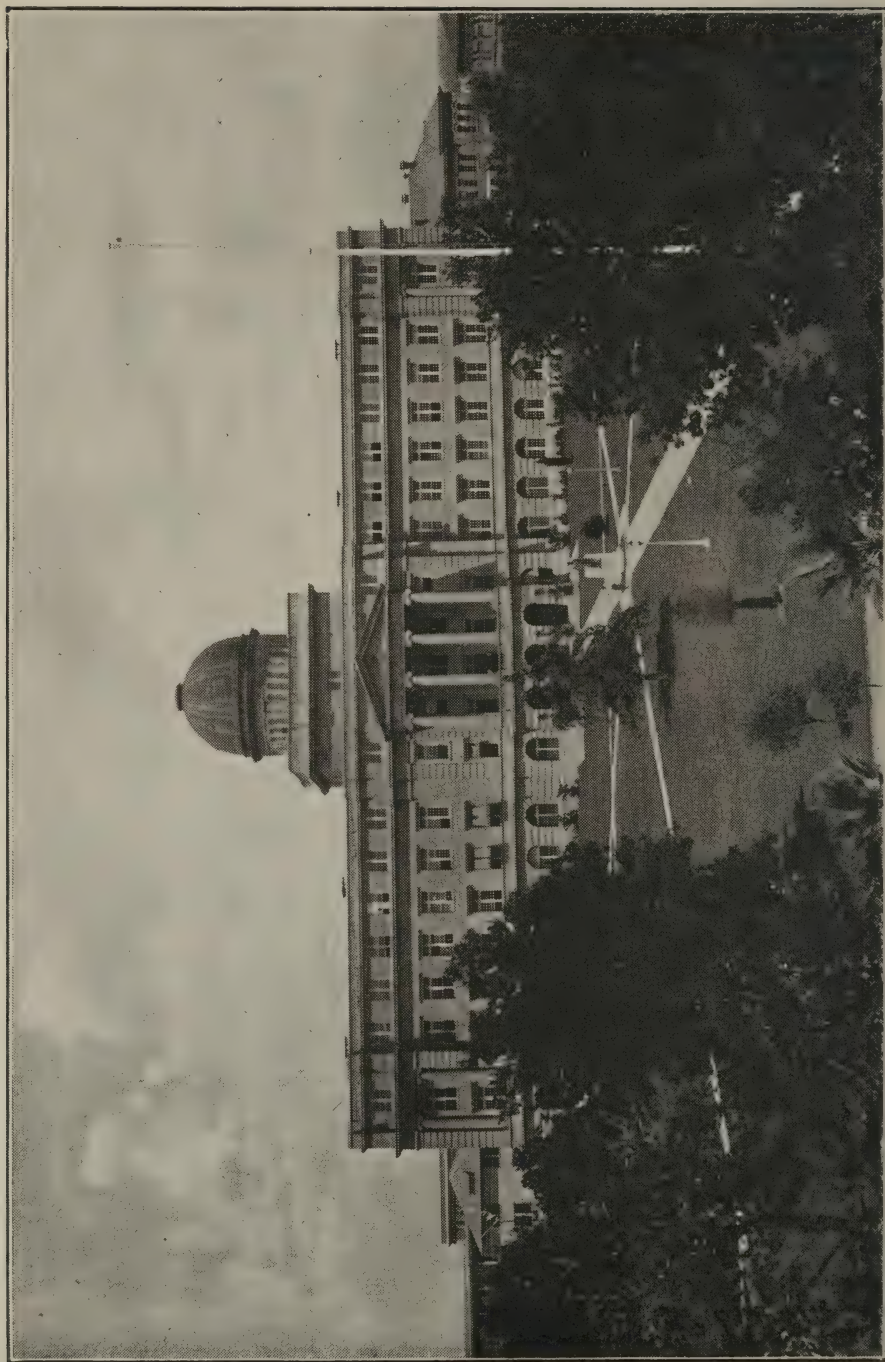
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UNIVERSITY OF ILLINOIS

COLLEGE STATION, TEXAS

Published monthly by the Agricultural and Mechanical College of Texas.

Entered as second class mail matter August 7, 1913, at the postoffice at College Station, Texas, under the Act of August 24, 1912.



THE ACADEMIC BUILDING

GENERAL STATEMENT

The summer session of the Agricultural and Mechanical College of Texas has been established for the following well-defined purposes:

1. To provide courses of instruction in all phases of agriculture and the allied sciences, and in automobiles and tractors, manual training, cotton classing, veterinary medicine and surgery, rural sanitation, rural economics, and rural social science, for the benefit of teachers, rural ministers, county and local officers, farmers, farm boys, farm women, rural merchants, and others who may be interested in any phase of agricultural or rural development.

2. To offer to young men and women having sufficient preparation the opportunity of taking courses for college credit, and also to permit students of the college to remove deficiencies or pursue courses toward graduation.

3. To provide the opportunity for graduate work in a limited number of courses carrying credit toward the degree of Master of Science.

The summer session will begin June 9, 1924.

CALENDAR

Summer Session, 1924.

- June 9, Registration Day for College Division, School of Cotton Classing and the Short Course for Electric Metermen.
- June 13, Short Course for Electric Metermen ends.
- July 4, Holiday.
- July 7, Short Course for Graduate Veterinarians begins.
- July 12, Short Course for Graduate Veterinarians ends.
- July 19, First Term of College Division, and the School of Cotton Classing ends.
- July 21, Second Term of the College Division begins.
- Aug. 30, Second Term of the College Division ends.

AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS.

WILLIAM BENNETT BIZZELL, Ph. D., D. C. L., LL. D.
President.

SUMMER SESSION, 1924.

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7

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 V. A. LITTLE, B. A.,
 Assistant Professor of Entomology.

Faculty of Summer Session

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R. W. DOWNARD,
Instructor in Mechanical Engineering.

L. K. LAURSEN,
Instructor in Mechanical Engineering.

B. C. JONES, B. S.,
Instructor in Chemistry.

E. K. SPAHR, M. A.,
Instructor in English.

T. H. BAKER Jr., B. S.,
Instructor in Drawing.

C. F. WIGGANS, M. S.,
Instructor in Horticulture.

GENERAL INFORMATION.

Organization.

The work of the 1924 summer session will be given in the following five divisions:

1. The College.
2. The School of Cotton Classing.
3. The Eight Weeks Course in Automobiles and Tractors.
4. The Short Course for Graduate Veterinarians.
5. The Short Course for Electric Metermen.

Admission Requirements.

In the College Division courses will be offered subject to the same general requirements as in the regular session.

To enter the eight weeks course in automobiles and tractors the student must be sixteen or more years old, and must present a certificate from some reliable person showing that he is in good standing in his community.

There are no fixed requirements for admission to the School of Cotton Classing.

Discipline.

Every student in the summer session is expected at all times to conform to the ordinary rules of propriety and gentlemanly conduct; to be truthful; to respect the rights of others; to be punctual and regular in attendance upon all required exercises; to apply himself diligently to his studies; and to have due regard for the preservation of College property.

For improper conduct, or failure to keep up with his studies, a student may at any time be required to withdraw from the College.

Board and Room.

Students of the summer session will take their meals in the main dining hall. This hall is conveniently located with reference to dormitories, lecture rooms, and laboratories.

Room accommodations will be provided for summer session students in new modern fireproof dormitories. These buildings are modern in every respect, including screens for protection against mosquitoes and flies, sewage connection, electric lights and running water. These dormitories will be in direct charge of a summer session official, who will see that study hours are observed and that proper conditions for work are maintained.

The cost of room and board for the six weeks term will be \$48.00. This does not include laundry. Bed linen, pillows and towels will be furnished by the student. All beds are single.

LOCATION.

The Agricultural and Mechanical College of Texas is located at College Station, on the Houston and Texas Central Railroad, and on the Fort Worth division of the International and Great Northern Railroad, ninety-two miles north of Houston. Both railroads run through the College grounds. The stations are only a short distance from the Academic building. At College Station there are express, telegraph and money order offices.

College Facilities.

All the educational facilities of the College will be placed at the disposal of the students of the summer session. The College plant consists of thirty-seven brick buildings. Ten of these are used for dormitories and twenty-seven for purposes of instruction. All buildings used for instruction are well equipped with laboratories. The Horticultural gardens, Agronomy plots, and greenhouses, are conveniently located, and form a part of the outside facilities for instruction.

The library of the College consists of the central collection, and several departmental libraries. The general library is housed in the Academic building and consists of about 20,000 volumes devoted to general literature and reference work. All the leading magazines and a number of daily papers are received at the library. All College departments have well-selected technical libraries for the use of students interested in special subjects. The general library will be open during the summer session on week days from 9 a. m. until 5 p. m.

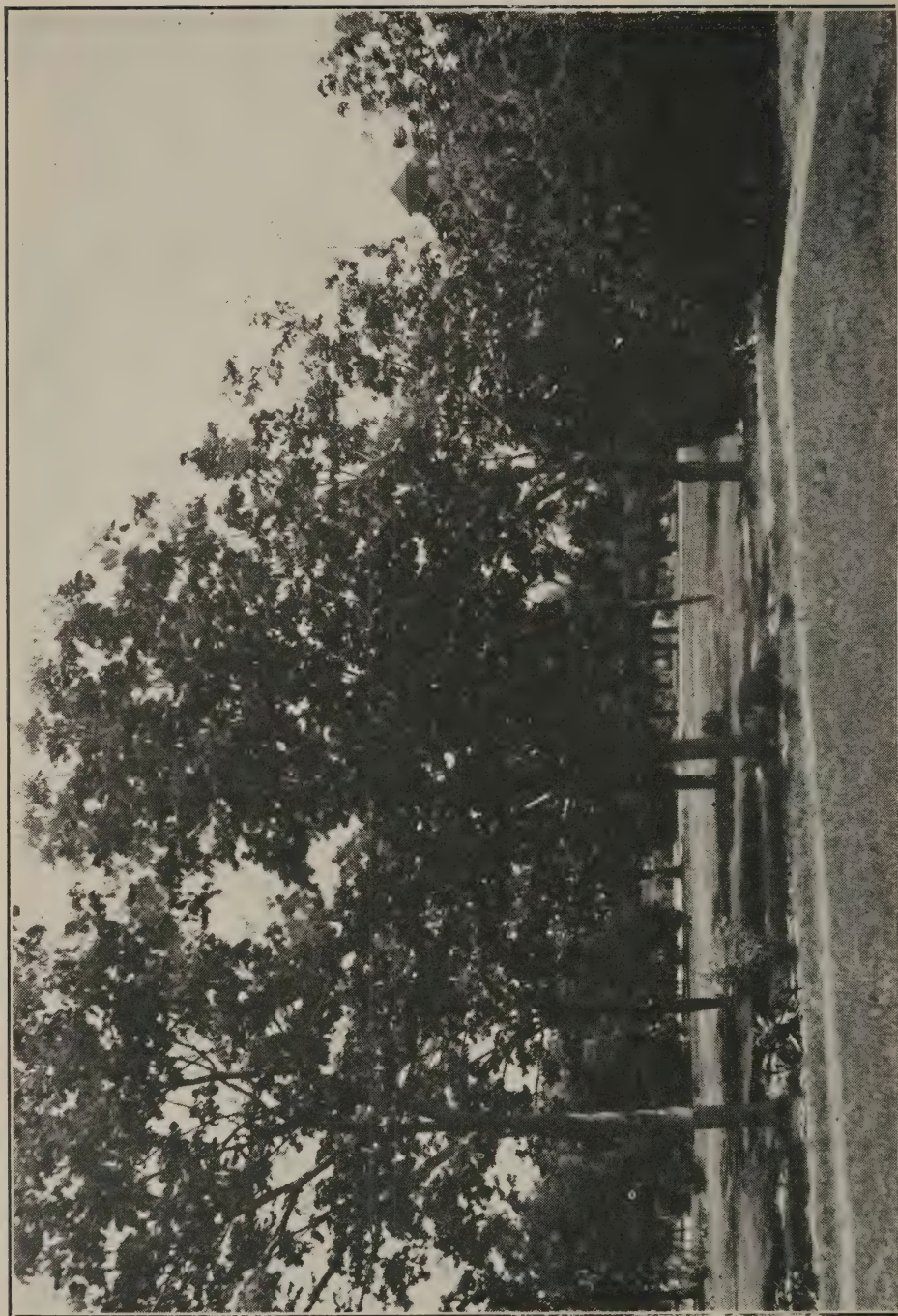
The College Exchange Store, located on the first floor of the Academic building, will carry a complete line of textbooks, reference books, stationery and general supplies needed by summer session students.

The modern, well-equipped College Hospital will be kept open during the entire summer session and the College physician and nurse will be on duty to serve the needs of summer session students.

Public Lectures.

Lectures on pedagogical, sociological, and agricultural subjects will be given by the members of the teaching staff and by others invited for this purpose.

On each Sunday morning a regular Bible School will be conducted at the College and religious services will be conducted in the College Chapel by visiting ministers.



A CAMPUS SCENE

Entertainment.

Two motion picture shows will be given each week. An open air theatre has been provided for all picture shows and other evening entertainments. The Y. M. C. A. will be open all summer and a number of social gatherings will be held in the lobby of this building. The large swimming pool in the basement of the Y. M. C. A. building will be available for the use of the summer session students during the entire session. The instructor in athletics will give lessons in swimming to those who desire them. Outdoor sports will be encouraged. The summer session is a member of a small baseball league and games are played with local teams.

Expenses.**For Students in the College Division.**

Incidental fee -----	\$10.00
Medical fee -----	2.50
Room and board per term of six weeks--	48.00

For the Eight Weeks' Course in Automobiles and Tractors.

Incidental fee -----	10.00
Medical fee -----	2.50
Room and board per term of eight weeks	64.00
Laboratory fee -----	50.00

For the School of Cotton Classing.

Laboratory fee -----	25.00
Medical fee -----	2.50
Room and board per term for six weeks--	48.00

The expenses for the Short Course for Graduate Veterinarians are listed on page 36.

Each student in the summer session, except those in the Short Course for Graduate Veterinarians, will be required to deposit a trust fund to cover breakage of laboratory material or damage to College property. The amount of this deposit is \$10.00 for students taking the eight weeks course in Automobiles and Tractors, and \$5.00 for all other students. The unused portion of this will be refunded by mail as soon after the close of the summer session as the fund can be checked up.

A key deposit of \$1.00 will be required of all students who room in the dormitories. This will be refunded to the student on leaving College, provided he returns his key to the Commandant's office. Students who do not room in the dormitories will not be required to pay the medical fee, nor will they be required to make a key deposit.

A student once entering the summer session for a term, and having paid for that term or the balance of it, forfeits

all claim to said payment in case of voluntary withdrawal from the College before the expiration of said term, except in case of sickness disqualifying him for the discharge of his duties for the rest of the term. When such sickness takes place at the College, it must be attested by the College Surgeon before the student can receive the balance of his maintenance fund. No refund on maintenance is allowed in cases where the students leave the College for the week-end only.

How to Register.

1. Report to Registration Desks in Lobby of the Academic Building, and fill out Registration card.

2. Report to the Business Manager, Room 120, first floor Academic building, and pay your fees. The Business Manager will give you a receipt, and a meal ticket.

3. Report to the Commandant, Room 101, first floor Academic building, for assignment to room.

4. Report to the Registrar, Room 223, second floor Academic building.

5. Report to the Director of the Summer Session, Room 210, second floor, for approval of your program.

6. Report promptly to all classes, as per the official schedules.

7. If further information is needed consult the Registrar, or the Director of the Summer Session.

All official notices concerning the Summer Session will be posted on bulletin boards Nos. 5 and 6, first floor Academic building.

All inquiries relative to the Summer Session should be addressed to the Director of the Summer Session, or the Registrar, College Station, Texas.

THE COLLEGE.

(June 9 to August 30).

All courses in this division carry college credit and are open only to those who have had the prerequisite training. The work will be given in two terms of six weeks each. The first term will begin June 9 and will end July 19. The second term will begin July 21 and will end August 30.

The maximum amount of work a student may carry in a six weeks term is the equivalent of eight term hours, except in the case of men who have had approved teaching experience; with the consent of the Director of the Summer Session such men may carry the equivalent of nine term hours. All rules of the regular session apply to the Summer Session in the matters of prerequisites, grades, examinations, and class absences. Three cases of tardiness to class will be counted as one absence.

All work in the Summer Session must be taken in accordance with the published schedule.

The last day on which a student may complete his registration for work in the College Division is Friday of the first week of each term. All students, except those registering for the first time, who do not complete their registration on the first day of each term will be charged a fee of five dollars for late registration. For sufficient reason, students entering on the second day of each term may be excused from paying the late registration fee.

The right is reserved to withdraw any course for which less than five students register.

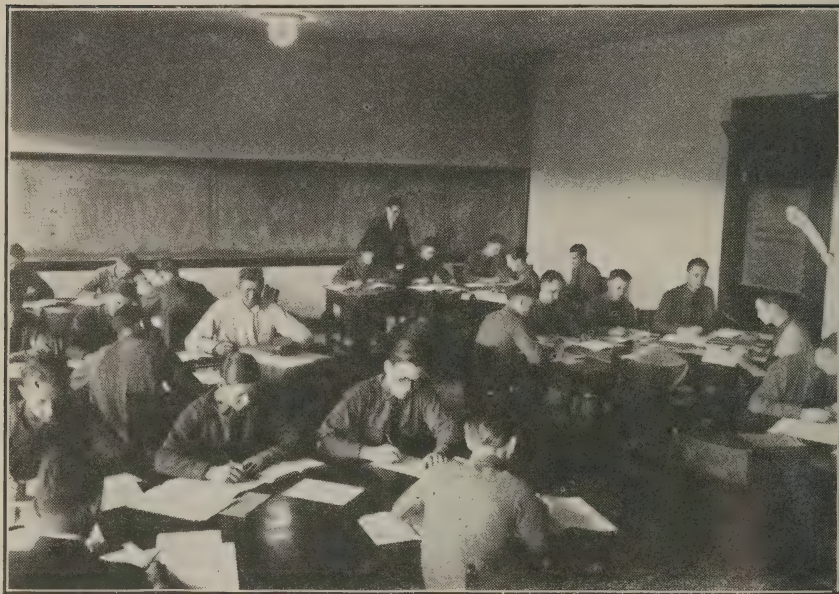
The courses for the first six-weeks term, are as follows

Note.—For a detailed description of the courses listed below, see the College Catalogue for the regular session.

Agricultural Economics.

312S. Agricultural Economics. Credit, 3 term hours.

Theory, daily, except S., at 11:30; practice, M., 2:30 to 5:25., W., 2:30 to 4:25.



STUDENTS AT WORK IN THE ACCOUNTING LABORATORY.

401S. Marketing. Credit, 3 term hours.

Daily at 10:30.

421S. Farm Management. Credit, 4 term hours.

Theory, daily, except S., at 8:30; practice, daily, except S., 3:30 to 5:25.

Agricultural Engineering.

203S. Gas Engines. Credit, 3 term hours.

Theory, daily, except S., at 8:30; practice, M., 1:30 to 4:25, W., 1:30 to 3:25.

Laboratory fee, \$1.50.

321S. Farm Shop. Credit, 1½ term hours.

M., W., 1:30 to 5:25.

322S. Farm Shop. Credit, 1½ term hours.

T., Th., 1:30 to 5:25.

Agronomy.

104S. The Fundamentals of Crop Production. Credit 4 term hours.

Theory, daily at 9:30; practice, S., 7:30 to 9:25, M., 2:30 to 5:25.

Laboratory fee, 50 cents.

301S. Soils. Credit, 4 term hours.

Prerequisite: Chemistry 101S, 102S.

Theory, daily at 7:30; practice, T., 1:30 to 4:25, Th., 1:30 to 3:25.

Laboratory fee, 50 cents.

Animal Husbandry.

102S. Judging Market Types of Hogs and Horses. Credit, 2 term hours.

Daily, except Saturday, from 3:30 to 5:25.

202S. Types and Breeds of Farm Animals. Credit, 3 term hours.

Prerequisite: Animal Husbandry 101, 102.

Theory, daily, except S., at 7:30; practice, F., 10:30 to 12:25, S., 9:30 to 12:25.



STUDENTS GETTING PRACTICE IN FITTING CATTLE FOR SHOW AND SALE

303S. Animal Nutrition. Credit, 4 term hours.

Prerequisite: Chemistry 206S.

Theory, daily, at 9:30; practice, T., 1:30 to 4:25, Th., 1:30 to 3:25.

409S. Animal Nutrition and Live Stock Feeding. Credit, 4 term hours.

Theory, daily, at 11:30; practice, T., 1:30 to 4:25; Th., 1:30 to 3:25.

416S. Live Stock Management. Credit, 4 term hours.

Prerequisite: Animal Husbandry 101, 102, 409.

Theory, daily, at 10:30; practice, W., 2:30 to 5:25, F., 3:30 to 5:25.

Biology.

101S. General Botany. Credit, 4 term hours.

Theory, daily, except S., at 8:30; practice, daily except S., 1:30 to 3:25.

Laboratory fee, 50 cents.

203S. General Zoology. Credit, 4 term hours.

Theory, daily, except S., at 11:30; practice, daily, except S., 1:30 to 3:25.

Laboratory fee, \$1.00.

Chemistry and Chemical Engineering.

101S. General Inorganic Chemistry. Credit, 4½ term hours.

Section 1. Theory, daily, at 9:30; practice, M., T., W., Th., 3:30 to 5:25.

Section 2. Theory, daily, at 11:30; practice, M., T., W., Th., 1:30 to 3:25.

Laboratory fee, \$3.50.

206S. Organic Chemistry. Credit, 4 term hours.

Prerequisite: Chemistry 101, 102.

Theory, daily, at 9:30; practice, S., 10:30 to 12:25, F., 2:30 to 5:25.

Laboratory fee, \$2.50.

207S. Quantitative Analysis. Credit, 3½ term hours.

Prerequisite: Chemistry 101, 102.

Theory, daily, except S., at 8:30; practice, M., T., W., Th., 1:30 to 3:25.

Laboratory fee, \$3.00.

Dairy Husbandry.

101S. Judging Dairy Cattle. Credit 1 term hour.

W., 2:30 to 4:25; F., 2:30 to 5:25.



NEW DAIRY STOCK JUDGING PAVILION

202S. Dairying. Credit, 3 term hours.

Theory, daily, except S., at 9:30; practice, S., 7:30 to 10:25; F., 3:30 to 5:25.

Laboratory fee, 75 cents.

Drawing.

101S. Mechanical Drawnig. Credit, 1½ term hours.

Hours to be arranged.

102S. Mechanical Drawing. Credit, 1½ term hours.

Prerequisite: Drawing 103.

Hours to be arranged.

103S. Descriptive Geometry. Credit, 2 term hours.

Hours to be arranged.

104S. Descriptive Geometry. Credit, 2 term hours.

Hours to be arranged.

201S. Mechanical Drawing. Credit, 1½ term hours.

Prerequisite: Drawing 101.

Hours to be arranged.

202S. Mechanical Drawing. Credit, 1½ term hours.

Hours to be arranged.

Economics.

306S. Principles of Economics. Credit, 3 term hours.

Daily, at 8:30; F., S., 11:30.

316S. Business Law. Credit, 3 term hours.

Daily, at 10:30.

Electrical Engineering.

201S. Electricity and Magnetism. Credit, 5 term hours.

Prerequisite: Mathematics 102, 103.

Theory, daily, at 8:30; practice, daily, except S., 1:30 to 3:25.

Laboratory fee, 75 cents.

English.

103S. Rhetoric and Composition. Credit, 3 term hours.

Daily, at 11:30.

203S. English Composition. Credit, 2 term hours.

Prerequisite: English 103, 104, or 105, 106.

Daily, except S., at 9:30.

303S. Argumentation. Credit, 2 term hours.

Prerequisite: English 203, 204.

Daily, except S., at 10:30.

Entomology.

201S. General Entomology. Credit, 3 term hours.

Theory, daily, except S., at 10:30; practice, S., 7:30 to 10:25, F., 1:30 to 3:25.

Laboratory fee, 75 cents.

304S. Apiculture. Credit, 3 term hours.

Theory, daily, except S., at 8:30; practice, T., 1:30 to 4:25, Th., 1:30 to 3:25.

Laboratory fee, 50 cents.

407S. Economic Entomology. Credit, 4 term hours.

Theory, daily, at 11:30; practice, W., 2:30 to 5:25, F., 3:30 to 5:25.

Genetics.

301S. Genetics. Credit, 4 term hours.

Prerequisite: Biology 101, 102, 201, 202.

Theory, daily, at 8:30; practice, W., 1:30 to 3:25, F., 1:30 to 4:25.

Laboratory fee, 50 cents.

Geology.

201S. General Geology. Credit, 4 term hours.

Prerequisite: Chemistry 101, 102.

Theory, daily, at 8:30; practice, T., 3:30 to 5:25, Th., 2:30 to 5:25.

Laboratory fee, \$1.50.

History.

305S. Citizenship. Credit, 3 term hours.

Daily, at 10:30.

307S. Europe Since 1815. Credit, 3 term hours.

Daily, at 9:30.

308S. Industrial History of the United States. Credit, 3 term hours.

Daily, at 8:30.

Horticulture.

201S. Plant Propagation and Orchardling. Credit, 3 term hours.

Prerequisite: Biology 101, 102.

Theory, daily, except S., at 10:30; practice, M., 1:30 to 4:25; W., 1:30 to 3:25.

Laboratory fee, 75 cents.

202S. Vegetable Gardening. Credit, 3 term hours.

Theory, daily, except S., at 9:30; practice, T., 1:30 to 4:25; Th., 1:30 to 3:25.

Laboratory fee, 75 cents.

304S. Nut Culture. Credit, 3 term hours.

Prerequisite: Horticulture 201.

Theory, M., W., F., at 8:30; practice, daily, except S., 3:30 to 5:25.

Laboratory fee, \$1.50.

307S. Introduction to Landscape Art. Credit 3 term hours.

Theory, daily, except S., at 9:30; practice, T., 1:30 to 4:25; Th., 1:30 to 3:25.

Mathematics.

101S. Algebra. Credit, 3 term hours.

Daily, at 7:30.

102S. Algebra. Credit, 3 term hours.

Daily, at 10:30.

103S. Trigonometry. Credit, 3 term hours.

Daily, at 8:30.

104S. Analytics. Credit, 3 term hours.

Prerequisite: Mathematics 101, 103.

Daily, at 9:30.

118S. Solid Geometry. Credit, 3 term hours.

Daily, at 11:30.

203S. Calculus. Credit, 5 term hours.

Prerequisite: Mathematics 104.

Daily, at 7:30.

204S. Calculus. Credit, 5 term hours.

Prerequisite: Mathematics 104.

Daily, at 10:30.

Mechanical Engineering.

103S. Woodwork. Credit, 1½ term hours.

Hours to be arranged.

Laboratory fee, \$1.50.

211S. Carpentry and Cabinet Making. Credit, 1½ term hours.

Prerequisite: Mechanical Engineering 103.

Hours to be arranged.

Laboratory fee, \$2.00.

209S, 309S. Machine Shop. Credit, 1½ term hours.

Prerequisite: Mechanical Engineering 104.

Hours to be arranged.

Laboratory fee, \$1.50.

314S. Engineering Mechanics. Credit, 3 term hours.

Daily, at 8:30.

318S. Engineering Mechanics. Credit, 2 term hours.

Prerequisite: Mechanical Engineering 317.

Daily, except, S., at 9:30.

Modern Languages.

311S. Beginning French. Credit, 3 term hours.

Daily at 10:30.

315S. Beginning Spanish. Credit, 3 term hours.

Daily, at 8:30.

425S. Second Year Spanish. Credit, 3 term hours.

Daily, at 9:30.

Physics.

103S. College Physics. Credit, 4 term hours.

Theory, daily, at 11:30; practices, W., 1:30 to 3:25; F., 1:30 to 4:25.

Laboratory fee, 50 cents.

104S. College Physics. Credit, 4 term hours.

Theory, daily, at 9:30; practice, W., 1:30 to 3:25; F., 1:30 to 4:25.

Laboratory fee, 50 cents.

203S. General. Credit, 4½ term hours.

Prerequisite: Mathematics 101, 103.

Theory, daily, at 7:30; practice, M., T., W., Th., 3:30 to 5:25.

Laboratory fee, \$1.00.

204S. General. Credit, 4½ term hours.

Prerequisite: Mathematics 101, 103.

Theory, daily at 10:30; practice, M., T., W., Th., 3:30 to 5:25.

Laboratory fee, \$1.00.

Poultry Husbandry.

201S. Farm Poultry. Credit, 3 term hours.

Theory, daily, except S., at 8:30; practice, T., 2:30 to 5:25; Th., 3:30 to 5:25.



CLASS IN POULTRY JUDGING.

301S. Preparing Poultry for Market. Credit, 3 term hours.

Theory, daily, except S., at 10:30; practice, M., 2:30 to 5:25, W., 3:30 to 5:25.

Rural Sociology.

410S. Leadership Training and Community Planning. Credit, 3 term hours.

Theory, M., W., F., at 9:30; practice, daily, except S., 1:30 to 3:25.

Textile Engineering.

101S. Cotton Classing. Credit, 1 term hour.

Daily, except S., at 1:30.

Laboratory fee, 50 cents.

Veterinary Anatomy.

52S. Animal Diseases. Credit, 4 term hours.

Theory, daily, at 7:30; practice, T., 1:30 to 4:25, Th., 1:30 to 3:25.

Laboratory fee, \$1.50.

Veterinary Medicine and Surgery.

371S. Clinics. Credit, $3\frac{1}{2}$ term hours.

Hours to be arranged.

455S. Diseases of Poultry. Credit, 2 term hours.

Daily, except S., at 8:30.

Agricultural Education.

- 121S. Elementary School Methods. Credit, 3 term hours.
Daily, at 8:30.
- 305S. Principles of Education. Credit, 3 term hours.
Daily, at 10:30.
- 308S. Educational Psychology. Credit, 3 term hours.
Daily, at 9:30.
- 322S. Rural Principalships. Credit, 3 term hours.
Daily, at 10:30.
- 402S. Administration of Vocational Agriculture. Credit, 3 term hours.
Daily, at 8:30.
- 418S. Visual Instruction. Credit, 3 term hours.
Theory, M., W., F., at 7:30; practice, daily, except S., 1:30 to 3:25.

Industrial Education.

- 305S. Organization of Industrial and Related Courses. Credit, 3 term hours.
Theory, daily, except S., at 7:30; practice, T., 1:30 to 4:25, Th., 1:30 to 3:25.
- 320S. Lesson Planning and Methods of Teaching Industrial Arts. Credit, 3 term hours.
Theory, daily, except S., at 10:30; practice, W., 1:30 to 4:25, F., 1:30 to 3:25.
- 402S. Administration and Supervision of Industrial Education. Credit, 3 term hours.
Daily, at 8:30.
- 403S. Psychology Applied to Industry. Credit, 3 term hours.
Daily, at 9:30.

Note.—For Industrial Education courses offered in other Departments, see Mechanical Engineering, page 21 and Drawing page 19.

Graduate Courses.

For the rules and regulations governing graduate work the student is referred to the Catalogue of the regular session. The following graduate courses will be available during the first term of the 1924 Summer Session:

First Six Weeks Term.

- Agricultural Economics 503S. Land Problems and Land Policies. Major.

Agricultural Education 501S, 502S. Agricultural Instruction. Major.

Agricultural Education 501aS, 502aS. Agricultural Instruction. Minor.

Agronomy 501S. Advanced farm Crops. Major.

Agronomy 501aS. Advanced Farm Crops. Minor.

Animal Husbandry 501S. Advanced Animal Nutrition. Major.

Dairy Husbandry 501S. Advanced Dairy Husbandry. Major.

Dairy Husbandry 501aS. Advanced Dairy Husbandry. Minor.

Entomology 501S. Research Entomology. Major.

Entomology 501aS. Research Entomology. Minor.

Entomology 505S. Advanced Apiculture. Major.

Entomology 505aS. Advanced Apiculture. Minor.

Entomology 507S. Economic Entomology. Major.

Entomology 507aS. Economic Entomology. Minor.

Genetics 501S. Advanced Genetics. Major.

Genetics 501aS. Advanced Genetics. Minor.

Rural Sociology 505S. Social Legislation. Major.

Rural Sociology 505aS. Social Legislation. Minor.

SECOND SIX WEEKS TERM.

(July 21 to August 30).

The following courses will be offered during the second six weeks term:

Agricultural Engineering.

315S. Tractors. Credit, 4 term hours.

Prerequisite: Agricultural Engineering 203.

Theory, daily, except S., at 9:30; practice, daily, except S., 3:30 to 5:25.

Laboratory fee, \$2.00.



AGRICULTURAL ENGINEERING PRACTICE

204S. Farm Machinery. Credit, 3 term hours.

Theory, daily, except S., at 7:30; practice, S., 9:30 to 12:25, Th., 1:30 to 3:25.

Agronomy.

308S. Forage Crops. Credit, 3 term hours.

Theory, daily, except S., at 7:30; practice, S., 9:30 to 12:25, Th., 1:30 to 3:25.

Laboratory fee, 50 cents.

Biology.

102S. General Botany. Credit, 4 term hours.

Theory, daily, except S., at 9:30; practice, daily, except S., 1:30 to 3:25.

Laboratory fee, 50 cents.

Chemistry and Chemical Engineering.

102S. General Inorganic Chemistry. Credit, 4½ term hours.

Theory, daily, at 8:30; practice, M., T., W., Th., 3:30 to 5:25.
Laboratory fee, \$3.50.

309S. Agricultural Chemistry. Credit, 4½ term hours.

Prerequisite: Chemistry 206.

Theory, daily, at 8:30; practice, M., T., W., Th., 3:30 to 5:25.
Laboratory fee, \$3.00.

Civil Engineering.

204S. Analytical Mechanics. Credit, 4 term hours.

Daily, except S., 8:30 to 10:25.

Prerequisite: Mathematics 203; to be accompanied by Mathematics 204.

Drawing.

101S. Mechanical Drawing. Credit, 1½ term hours.

Hours to be arranged.

102S. Mechanical Drawing. Credit, 1½ term hours.

Prerequisite: Drawing 103.

Hours to be arranged.

103S. Descriptive Geometry. Credit, 2 term hours.

Hours to be arranged.

104S. Descriptive Geometry. Credit, 2 term hours.

Hours to be arranged.

201S. Mechanical Drawing. Credit, 1½ term hours.

Prerequisite: Drawing 101.

Hours to be arranged.

- 202S. Mechanical Drawing. Credit, $1\frac{1}{2}$ term hours.
Hours to be arranged.

Economics.

- 306S. Principles. Credit, 3 term hours.
Daily, at 10:30.
- 311S. Money and Banking. Credit, 3 term hours.
Prerequisite: Economics 204 or 306.
Daily, at 9:30.

Electrical Engineering.

- 202S. Elementary Electrical Engineering. Credit, 4 term hours.
Prerequisite: Electrical Engineering 201, Mathematics 104.
Theory, daily, except S., at 8:30; practice, daily, except S., 1:30 to 3:25.
Laboratory fee, \$1.75.
- 305S. Electrical Machinery. Credit, $4\frac{1}{2}$ term hours.
Prerequisite: Physics 204, Mathematics 204 or 205.
Theory, daily, at 9:30; practice, M., T., W., Th., 3:30 to 5:25.
Laboratory fee, \$1.00.

English.

- 104S. Rhetoric and Composition. Credit, 3 term hours.
Daily, at 11:30.
- 204S. English Composition. Credit, 2 term hours.
Prerequisite: English 103, 104, or 105, 106.
Daily, except S., at 9:30.
- 304S. Argumentation. Credit, 2 term hours.
Prerequisite: English 203, 204.
Daily, except S., at 10:30.

History.

- 305S. Citizenship. Credit, 3 term hours.
Daily, at 7:30.
- 307S. Europe Since 1815. Credit, 3 term hours.
Daily, at 8:30.

Horticulture.

- 303S. Principles of Fruit Production. Credit, 4 term hours.
Prerequisite: Horticulture 201.
Theory, daily, at 7:30; practice, M., 2:30 to 5:25, W., 3:30 to 5:25.
Laboratory fee, \$1.00.

401S. Systematic Pomology. Credit, 4 term hours.

Prerequisite: Horticulture 303.

Theory, daily at 9:30; practice, T., 2:30 to 5:25, Th., 3:30 to 5:25.

Laboratory fee, \$4.00.

Mathematics.

102S. Algebra. Credit, 3 term hours.

Daily, at 7:30.

104S. Analytics. Credit, 3 term hours.

Prerequisite: Mathematics 101, 103.

Daily, at 10:30.

204S. Calculus. Credit, 5 term hours.

Prerequisite: Mathematics 104.

Daily, at 11:30.

Modern Languages.

312S. Beginning French. Credit, 3 term hours.

Daily, at 10:30.

316S. Beginning Spanish. Credit, 3 term hours.

Daily, at 8:30.

426S. Second Year Spanish. Credit, 3 term hours.

Daily, at 9:30.

Poultry Husbandry.

302S. Feeding and Brooding Poultry. Credit, 4 term hours.

Theory, daily, at 11:30; practice, M., 1:30 to 3:25, W., 1:30 to 4:25.

Rural Sociology.

312S. Principles of Sociology. Credit, 3 term hours.

Daily, at 10:30.

Veterinary Medicine and Surgery.

372S. Clinics. Credit, 6 term hours.

Hours to be arranged.

Agricultural Education.

122S. Elementary School Methods. Credit, 3 term hours.

Daily, at 8:30.

425S. Rural Life Problems. Credit, 3 term hours.

Daily, at 10:30.

Industrial Education.

305S. Organization of Industrial and Related Courses. Credit, 3 term hours.

Theory, daily, except S., at 7:30; practice, T., 1:30 to 4:25, Th., 1:30 to 3:25.

306S. Educational and Vocational Guidance. Credit, 3 term hours.

Daily, at 9:30.

401S. Classroom Organization and Management. Credit, 3 term hours.

Theory, daily, except S., at 8:30; practice, M., 1:30 to 4:25; W., 1:30 to 3:25.

404S. Training and Supervising Workers in Industrial Plants. Credit, 3 term hours.

Daily, at 10:30.

Graduate Courses.

The following Graduate Courses will be available during the second term of the Summer Session:

Dairy Husbandry 502S. Advanced Dairy Husbandry. Major.

Dairy Husbandry 502aS. Advanced Dairy Husbandry. Minor.

Entomology 502S. Research Entomology. Major.

Entomology 502aS. Research Entomology. Minor.

Entomology 506S. Advanced Apiculture. Major.

Entomology 506aS. Advanced Apiculture. Minor.

Entomology 508S. Economic Entomology. Major.

Entomology 508aS. Economic Entomology. Minor.

Horticulture 502S. Advanced Fruit Growing. Major.

Rural Sociology 506S. Social Legislation. Major.

Rural Sociology 506aS. Social Legislation. Minor.

EIGHT WEEKS' COURSE IN AUTOMOBILES AND TRACTORS.

GENERAL STATEMENT.

The Eight Weeks' Automobile and Tractor Course offered by the Agricultural Engineering Department of the Agricultural and Mechanical College of Texas has been established for the following well-defined purposes:

1. To provide the power farmer an opportunity to increase his knowledge of the gas engine, tractor and automobile by systematic study, thus enabling him to obtain maximum efficiency at minimum expense.

2. To give the boy or man wishing to enter the automotive industry as a manager, salesman, demonstrator or mechanic, a short course in the fundamental mechanics of that industry.

3. To afford the general public interested in automotive mechanics an opportunity to get a short course in this subject.

From all these sources the demand is the same—better mechanics. Internal combustion motors are built better today than ever before, but even with these improved engines it is necessary that they have intelligent operation if maximum efficiency is to be obtained from them. The annual loss due to inefficient operation is very great and can only be eliminated by properly trained men. To meet this demand for information the Eight Weeks' Tractor and Automobile Course was established four years ago during which time hundreds of men have been successfully trained in the work and have gone out to take up positions as mechanics, operators of trucks, tractors, and gas engines, salesmen and managers.

Outline of Regular Course.

The Automobile and Tractor Short Course is divided into eight parts of one week each and so arranged that each succeeding week carries the student further along in the study of auto-mechanics. The work of each week has been very carefully outlined and such work that is not essential has been eliminated, leaving only material of vital importance in the course. Following is given a brief outline of what is given in each weeks' work.

Metal Working Department.

In the metal working department the making of various parts of automobiles and tractors out of iron, steel, brass, aluminum, etc., is taken up as well as the repairing of these same pieces. The making of such special tools as a mechanic may need is also considered and the student gets first-hand information by making cold chisels, punches, offset screw drivers, etc. The tempering of these tools is an important factor and the student is required to see that the tools he makes are properly tempered.

Soldering of various metals is done by the student in his laboratory work. Welding not only with the open fire is given but also with oxygen-acetylene torch.

Chassis Department.

The work in the chassis department consists in getting familiar with the different parts of the chassis of automobiles and tractors, such as the wheels, springs, differential, frame, transmission clutch, etc. The student studies the various types of these different parts and gets not only familiar with what they look like but also their repair and adjustment.

Gas Engine Department.

The work in the gas engine department is for the purpose of getting the student familiar with the single cylinder gas engine such as is found on the farm. No course in auto-mechanics would be complete without having had work in this vital department. While the theory underlying the operation of these engines is the same as any other gas engine, it is essential that the student become familiar with the practical application of these theories. The work of this department takes up in detail the various methods of cooling, governing, igniting and mixing the gas as found on farm gas engines.

Motor Department.

In the motor department the student is taught the construction, care, and operation of multiple cylinder engines. He not only is taught how to properly operate the multiple cylinder, but also to properly overhaul four, six, and eight cylinder engines under expert supervision. In overhauling these motors the student becomes familiar with the different parts of the motor and how they are put together, and in addition learns how to properly grind a valve; pour, scrape and fit a bearing; fit a piston with piston rings; and time valves.

Electrical Department.

In the electrical department the student studies ignition,

which is the principle of electricity as applied to the ignition of the internal combustion engine. He spends two weeks in this department, the first week of which is taken up with a study of elementary electricity and its application of coils, magnetos, distributors, spark plugs; all of which are found on ignition systems of autos and trucks. Special attention is given to the magneto; its operation, care, and repair. During the second week in this department the student takes up work along the same line as that given in the previous week with special emphasis being placed on the details of ignition timing. Starting and lighting systems connected to the ignition system of various standard makes are arranged on special stands which allow the student to see just the electrical part of the car.

Tractor Department.

The work of the tractor department takes up the difference in design, methods of operation and construction, together with the care and repair of the various makes and sizes of tractors on the market today. The student gets an opportunity to operate the various tractors found in the laboratory.

Trouble Shooting Department.

The work in the trouble shooting department gives the student an opportunity to use all the information and skill that he has gained in the previous weeks by solving motor troubles. Here the instructor puts the motor in trouble by causing to occur some irregularity which is liable to happen under ordinary conditions. It is the student's problem to discover the cause of the trouble and to remedy it. He thus becomes familiar with the troubles to be found in motors.

Advanced Courses.

In addition to the regular eight weeks course, three advanced courses are offered to those who successfully complete the eight weeks' course. These advanced courses may be of four or eight weeks duration, depending upon the student's wishes. The mission of these courses is to carry the student further along some special line as it is realized that in the regular eight weeks' course not sufficient time is available for those wishing to become specialists in any one subject.

When Courses Start.

Courses start June 18 and 25.

Who May Enter Course.

In order to enter this course the student must be sixteen or more years old, and must present a certificate from some

reliable person showing that he is in good standing in his community.

Cost of Course.

<i>Incidental Fee</i>	\$ 10.00
For sundry expenses, such as printed forms, examination books, etc.	
<i>Medical Fee</i>	2.50
For the services of the College Surgeon and Hospital Staff who are at the service of the student.	
<i>Maintenance Fee</i>	64.00
For board, fuel, laundry, light, room rent, bedstead, mattress, table and chair.	
<i>Laboratory and Instruction Fee</i>	50.00
For cost of instruction.	
Total.....	<hr/> \$126.50
<i>Trust Fund</i>	\$ 10.00
This trust fund is required of each student as a deposit for his books and tools. It is refunded to him after the completion of the course if the books and tools are returned.	

CERTIFICATE.

If the student's work is satisfactory, he is given a certificate showing that this is the case. These certificates are granted only to those who pass and complete the course.

THE SCHOOL OF COTTON CLASSING.

(June 9 to July 19)

The object of the School of Cotton Classing is to prepare young men for cotton buying and the managing of cotton warehouses, and to offer to farmers the opportunity of increasing their knowledge of the leading farm product of Texas.

A study is made of the elements which determine the commercial grades of cotton; the influence which affects the price of cotton; the system of financing the crop from the field to factory, and the relation of exchanges to the business in general. Each class is furnished with new samples for practice and the work is patterned after that of a cotton office. The samples used in the Summer School are obtained from the cotton states west of the Mississippi River and an effort is made to familiarize the student with the different characteristics of cotton grown in the southwest.

Special attention will be paid to the staple of cotton, and experts in this branch will give instruction in this subject. Many samples of various lengths of staple will be provided for students taking up this line of work.

The government standards for classing cotton, which have been adopted by all the exchanges, will be used.

The announcement giving complete details relative to the work of this division will be ready for distribution March 1, 1924, and can be secured by addressing Professor J. B. Bagley, College Station, Texas.

SHORT COURSE FOR ELECTRIC METERMEN.

(June 9 to 13).

The object of this course is to give intensive instruction covering the principles of operation, the calibration and methods of repair of electric meters.

While the course is of special interest to employees of those central stations which do not find it possible to provide training for the members of their meter departments, it is of value to any one interested in the testing, adjusting or installing of electric meters.

The instruction is given in the form of lectures, demonstrations and individual laboratory work, and covers the fundamentals of electric circuits and the principles underlying the operation of electric meters.

Two courses are given; one dealing with the more elementary principles of electricity and the single phase meter, and the other for more advanced men will cover polyphase meters.

A more detailed announcement may be obtained by addressing Professor F. C. Bolton, College Station, Texas.

SHORT COURSE FOR GRADUATE VETERINARIANS.

(July 7 to 12)

This course is planned to provide opportunities for veterinarians to become more familiar with problems which their particular line of work or kind of practice up to this time, has not presented.

Some of the newer and more dependable methods of diagnosis will be considered.

Character of Work.

Lectures, practice periods, laboratory work and clinics will be offered in poultry diseases, practical microscopy, diseases of small animals, diseases of the reproductive organs, animal breeding, feeds and feeding, medicine and surgery.

Entertainment.

The evenings will be used for round table discussions, moving pictures of an educational and entertaining nature, and lectures. Ample facilities for bathing, playing tennis, and golf are available.

Expenses.

The only charges for this course are for board and room. Meals will be provided for \$1.25 a day and a charge of fifty cents a day will be made for lodging.

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BULLETIN
OF
THE AGRICULTURAL AND MECHANICAL
COLLEGE OF TEXAS

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FEBRUARY 1, 1923.

No. 2

THE SUMMER SESSION

June 11—September 1, 1923.

The College (Twelve Weeks).

The School of Cotton Classing (Six Weeks).

The School of Grain Grading (Six Weeks).

The Eight Weeks Course in Automobiles and Tractors.

The Farm Boys' Division (Four Weeks).

The Short Course for Country Ministers and County Editors
(Two Weeks).

The Short Course for Graduate Veterinarians (One Week).

The Farmers' Short Course (One Week).

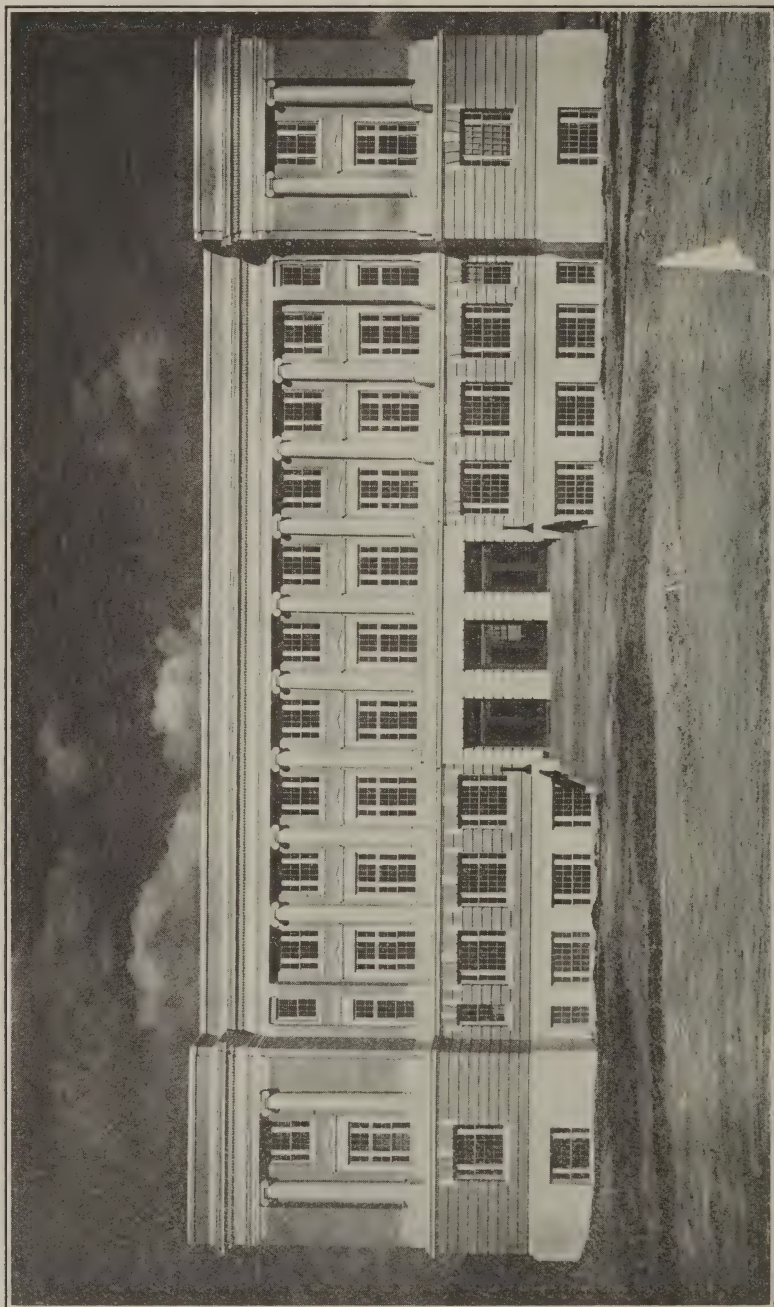
The Short Course for Electric Metermen (One Week).



COLLEGE STATION, TEXAS

Published monthly by the Agricultural and Mechanical College of Texas.

Entered as second class mail matter August 7, 1913, at the postoffice at College Station, Texas, under the Act of August 24, 1912.



The New Agricultural Building. Home of the Departments of Agricultural Economics
Agronomy, Farm Management, Horticulture, Poultry Husbandry, and Rural Sociology.

GENERAL STATEMENT

The summer session of the Agricultural and Mechanical College of Texas has been established for the following well-defined purposes:

1. To provide courses of instruction in all phases of agriculture and the allied sciences, and in automobiles and tractors, manual training, cotton classing, grain grading, veterinary medicine and surgery, rural sanitation, rural economics, and rural social science, for the benefit of teachers, rural ministers, county and local officers, farmers, farm boys, farm women, rural merchants, and others who may be interested in any phase of agricultural or rural development.

2. To offer to young men and women having sufficient preparation the opportunity of taking courses for college credit, and also to permit students of the college to remove deficiencies or pursue courses toward graduation.

3. To provide the opportunity for graduate work in a limited number of courses carrying credit toward the degree of Master of Science.

The summer session will begin June 11, 1923.

CALENDAR

Summer Session, 1923.

- June 11—Registration Day for College Division, School of Cotton Classing, School of Grain Grading, and the Short Course for Electric Metermen.
- June 15—Short Course for Electric Metermen ends.
- July 2—Farm Boys' Division begins.
- July 4—Holiday.
- July 16—Short course for Country Ministers and County Editors, and Short Course for Graduate Veterinarians begin.
- July 21—First term of College Division, School of Cotton Classing, School of Grain Grading, and the Short Course for Graduate Veterinarians end.
- July 23—Second term of College Division and the Farmers' Short Course begins.
- July 28—Farmers' Short Course, Farm Boys' Division, and Short Course for Country Ministers and County Editors end.
- Sept. 1—Second term of College Division ends.

AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS.

WILLIAM BENNETT BIZZELL, Ph. D., D. C. L., LL. D.,
President.

SUMMER SESSION, 1923

EXECUTIVE COMMITTEE OF THE FACULTY FOR THE SUMMER SESSION.

J. OSCAR MORGAN, M. S. A., Ph. D.,
Professor of Agronomy,
Chairman.

CHARLES PURYEAR, M. A., C. E., LL. D.,
Dean of the College.

MARTIN L. HAYES, B. S., A. M.,
Professor of Vocational Teaching.

D. SCOATES, A. E.,
Professor of Agricultural Engineering.

J. B. BAGLEY, B. A.,
Professor of Textile Engineering.

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WILLIAM BENNETT BIZZELL, Ph. D., D. C. L., LL. D., President.

CHARLES PURYEAR, M. A., C. E., LL. D., Dean of the College.

JAMES OSCAR MORGAN, M. S. A., Ph. D., Director of the Summer Session.

IKE ASHBURN, Commandant.

WALTER WIPPRECHT, B. S. A., Business Manager.

CHARLES E. FRILEY, B. S., Registrar.

W. H. MATHEWS, A. B., D. D., Y. M. C. A. Secretary.

S. H. HICKMAN, Superintendent of Y. M. C. A. Building.

T. F. MAYO, M. A., Librarian.

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Professor of Horticulture.

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Professor of Textile Engineering.

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Professor of Electrical Engineering.

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Director of the Summer Session.

Professor of Agronomy.

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Professor of Drawing.

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Professor of Chemistry and Chemical Engineering.

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F. B. CLARK, M. A., Ph. D.,
Professor of Economics.

S. W. BILSING, M. A.,
Professor of Entomology.

J. F. McDONALD, A. M.,
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Professor of Architecture.

COLONEL I. S. ASHBURN,
Commandant.

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F. A. BUECHEL, Ph. M., Ph. D.,
Professor of Agricultural Economics.
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Professor of Geology.
GEO. SUMMEY, Ph. D.,
Professor of English.

A. T. POTTS, M. S.,
Professor of Vegetable Gardening.
R. F. SMITH,
Professor of Mathematics.
D. W. WILLIAMS, M. S.
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B. D. MARBURGER, B. S.,
Professor of Railroad Engineering.
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Professor of Landscape Art.
H. R. BRAYTON, A. B., M. S.,
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C. W. BURCHARD, A. M.,
Professor of Chemistry and Chemical Engineering.

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Associate Professor of Mathematics.
S. N. BLACKBERG, D. V. M.,
Associate Professor of Veterinary Physiology and Pharmacology.
A. A. LENERT, B. S., D. V. M.,
Associate Professor of Veterinary Medicine.

Agricultural and Mechanical College of Texas

S. D. SNYDER, B. S.,
Associate Professor of Agricultural Engineering.
R. K. FLETCHER, M. A.,
Associate Professor of Entomology.
L. E. DOWD,
Associate Professor of Textile Engineering.
D. S. BUCHANAN, B. S.,
Associate Professor of Animal Husbandry.
J. H. STALLINGS, M. S.,
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A. L. DARNELL, B. S., M. A.,
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E. E. VEZEY, B. S.,
Assistant Professor of Physics.
M. E. COX, B. S.,
Assistant Professor of Mathematics.
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Assistant Professor of Horticulture.
H. M. MILTON, B. S.,
Assistant Professor of Mechanical Engineering.
C. W. CRAWFORD, B. S.,
Assistant Professor of Mechanical Engineering.
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Assistant Professor of Animal Husbandry.
L. L. FOURAKER, B. S.,
Assistant Professor of Electrical Engineering.
L. A. KOENIG, B. S.,
Assistant Professor of Chemistry.
F. R. JONES, B. S.,
Assistant Professor of Agricultural Engineering.

Faculty of the Summer Session

9

- B. C. JONES, A. B.,
Assistant Professor of Chemistry.
- P. F. ENGLISH, M. S.,
Assistant Professor of Biology.
- A. V. BREWER, M. E.,
Assistant Professor of Mechanical Engineering.
- E. O. POLLOCK, M. S.,
Assistant Professor of Agronomy.
- L. L. CHAPPELLE,
Instructor in Mechanical Engineering.
- A. J. SPIETH, A. B.,
Instructor in Chemistry.
- WALTER DOWNARD,
Instructor in Mechanical Engineering.
- L. K. LAURSEN,
Instructor in Mechanical Engineering.
- J. B. OLIPHINT, B. S.,
Instructor in Rural Sociology.
- W. H. COPENING, B. S.,
Instructor in Agronomy.
- N. F. RODE, B. S.,
Instructor in Electrical Engineering.
- E. R. MIDDLETON, M. S.,
Instructor in Chemistry.
- W. W. McCARTER,
Instructor in Mechanical Engineering.

GENERAL INFORMATION.

ORGANIZATION.

The work of the 1923 summer session will be given in the following nine divisions:

1. The College.
2. The School of Cotton Classing.
3. The School of Grain Grading.
4. The Eight Weeks Course in Automobiles and Tractors.
5. The Farm Boys' Division.
6. The Short Course for Country Ministers and County Editors.
7. The Short Course for Graduate Veterinarians.
8. The Farmers' Short Course.
9. The Short Course for Electric Metermen.

ADMISSION REQUIREMENTS.

In the College Division courses will be offered subject to the same general requirements as in the regular session.

To enter the eight weeks course in automobiles and tractors the student must be sixteen or more years old, and must present a certificate from some reliable person showing that he is in good standing in his community.

The work of the Farm Boys' division is open only to boys not under fourteen or over eighteen years of age.

There are no fixed requirements for admission to the School of Cotton Classing, the School of Grain Grading, or the Farmers' Short Course.

DISCIPLINE.

Every student in the summer session is expected at all times to conform to the ordinary rules of propriety and gentlemanly conduct; to be truthful; to respect the rights of others; to be punctual and regular in attendance upon all required exercises; to apply himself diligently to his studies; and to have due regard for the preservation of College property.

For improper conduct, or failure to keep up with his studies, a student may at any time be required to withdraw from the College.

BOARD AND ROOM.

Students of the summer session will take their meals in the main dining hall. This hall is conveniently located with reference to dormitories, lecture rooms, and laboratories.

Room accommodations will be provided for summer session students in new modern fireproof dormitories. These buildings are modern in every respect, including screens for protection against mosquitoes and flies, sewage connection, electric lights and running water. These dormitories will be in direct charge of a summer session official, who will see that study hours are observed and that proper conditions for work are maintained.

The cost of room and board for the six weeks term will be \$48.00. This does not include laundry. **Bed linen, pillows and towels will be furnished by the student. All beds are single.**

LOCATION.

The Agricultural and Mechanical College of Texas is located at College Station, on the Houston and Texas Central Railroad, and on the Fort Worth division of the International and Great Northern Railroad, ninety-two miles north of Houston. Both railroads run through the College grounds. The stations are only a short distance from the Academic building. At College Station there are express, telegraph and money order offices.

COLLEGE FACILITIES.

All the educational facilities of the College will be placed at the disposal of the students of the summer session. The College plant consists of twenty-seven brick buildings. Nine of these are used for dormitories and eighteen for purposes of instruction. All buildings used for instruction are well equipped with laboratories. The Horticultural gardens, Agronomy plots, and greenhouses, are conveniently located, and form a part of the outside facilities for instruction.

The library of the College consists of the central collection, and several departmental libraries. The general library is housed in the Academic building and consists of about 17,000 volumes devoted to general literature and reference work. All the leading magazines and a number of daily papers are received at the library. All College departments have well-selected technical libraries for the use of students interested in special subjects. The general library will be open during the summer session on week days from 9 a. m. until 5 p. m.

The College Exchange Store, located on the first floor of the Academic building, will carry a complete line of text-books, reference books, stationery and general supplies needed by summer session students.

The modern, well-equipped College Hospital will be kept open during the entire summer session and the College physician and nurse will be on duty to serve the needs of summer session students.

PUBLIC LECTURES.

Lectures on pedagogical, sociological, and agricultural subjects will be given by the members of the teaching staff and by others invited for this purpose.

On each Sunday morning a regular Bible School will be conducted at the College and religious services will be conducted in the College Chapel by visiting ministers.

ENTERTAINMENT.

Two motion picture shows will be given each week. An open air theatre has been provided for all picture shows and other evening entertainments. The Y. M. C. A. will be open all summer and a number of social gatherings will be held in the lobby of this building. The large swimming pool in the basement of the Y. M. C. A. building will be available for the use of the summer session students during the entire session. The instructor in athletics will give lessons in swimming to those who desire them. Outdoor athletic sports will be encouraged. The summer session is a member of a small baseball league and games are played with local teams.

EXPENSES.**For Students in the College Division.**

Incidental fee	\$10.00
Medical fee	2.50
Room and board per term of six weeks	48.00

For the Eight Weeks' Course in Automobiles and Tractors.

Incidental fee	10.00
Medical fee	2.50
Room and board per term of eight weeks	64.00
Laboratory fee	50.00

For the School of Cotton Classing.

Laboratory fee	25.00
Medical fee	2.50
Room and board per term of six weeks	48.00

For the School of Grain Grading.

Laboratory fee	25.00
Medical fee	2.50
Room and board per term of six weeks	48.00

For the Farm Boys' Division.

Incidental fee	5.00
Medical fee	2.50
Room and board per term of four weeks	32.00

The expenses for the Short Course for Country Ministers and County Editors, and for the Short Course for Graduate Veterinarians, are listed on pages 67 and 68 respectively.

Each student in the summer session, except those in the Short Course for Country Ministers and County Editors and in the Short Course for Graduate Veterinarians, will be required to deposit a trust fund to cover breakage of laboratory material or damage to College property. The amount of this deposit is \$10.00 for students taking the eight weeks course in Automobiles and Tractors, and \$5.00 for all other students. The unused portion of this will be refunded by mail as soon after the close of the summer session as the fund can be checked up.

A key deposit of \$1.00 will be required of all students who room in the dormitories. This will be refunded to the student on leaving College, provided he returns his key to the Commandant's office. Students who do not room in the dormitories will not be required to pay the medical fee, nor will they be required to make a key deposit.

A student once entering the summer session for a term, and having paid for that term or the balance of it, forfeits all claim to said payment in case of voluntary withdrawal from the College before the expiration of said term, except in case of sickness disqualifying him for the discharge of his duties for the rest of the term. When such sickness takes place at the College, it must be attested by the College Surgeon before the student can receive the balance of his maintenance fund. No refund on maintenance is allowed in cases where the students leave the College for the week-end only.

HOW TO REGISTER.

1. Report to the Business Manager, Room 120, first floor Academic building, and pay your fees. Be sure and specify the Division of the summer session you are entering. The Business Manager will give you a receipt, and a meal ticket.

2. Present your receipt to the Commandant, Room 101, first floor Academic building, for assignment to room.

3. Present your receipt to the Registrar, Room 223, second floor Academic building, and obtain an Assignment Card.

4. Take your Assignment Card to the Director of the Summer Session, Room 210, second floor, for assignment to classes.

5. Report promptly to all classes, as per the official schedules.

6. If further information is needed consult the Registrar, or the Director of the Summer Session.

All official notices concerning the Summer Session will be posted on bulletin boards Nos. 5 and 6, first floor Academic building.

All inquiries relative to the Summer Session should be addressed to the Director of the Summer Session, or the Registrar, College Station, Texas.

THE COLLEGE.

(June 11 to September 1).

All courses in this division carry college credit and are open only to those who have had the prerequisite training. The work will be given in two terms of six weeks each. The first term will begin June 11 and will end July 21. The second term will begin July 23 and will end September 1.

The maximum amount of work a student may carry in a six weeks term is the equivalent of eight term hours, except in the case of men who have had approved teaching experience; with the consent of the Director of the Summer Session such men may carry the equivalent of nine term hours. All rules of the regular session apply to the Summer Session in the matters of prerequisites, grades, examinations, and class absences. Three cases of tardiness to class will be counted as one absence.

All work in the Summer Session must be taken in accordance with the published schedule.

The last day on which a student may complete his registration for work in the College Division is Friday of the first week of each term. All students, except those registering for the first time, who do not complete their registration on the first day of each term will be charged a fee of five dollars for late registration.

The right is reserved to withdraw any course for which less than five students register.

The courses for the first six-weeks term, are as follows:

Note.—The figures in parentheses following the name of a course indicate the number of hours per week, theory and practice, respectively, devoted to the course.

AGRICULTURAL ECONOMICS.

301S. Agricultural Economics. (5-5). Credit, 3 term hours.

Among the topics considered are the following: Scope and aims of agricultural economics; analysis of the factors in agricultural production, such as the supply of arable land in the nation, its classification and order of utilization; the amount and character of labor required in different parts of the United States; migratory labor; possibilities of improving type and conditions of agricultural labor; marketing, agricultural finance, co-operation, transportation. Distribution, including theories of rent, value of land and its relation to rent, methods of renting. Consumption, its effect upon rent, wages, interest, and national

prosperity. Agriculture and the State—tariffs, land settlement, taxation, and credit.

Text: *Agricultural Economics*, Taylor.

(Required in XIV).

401S. Marketing. (6-0). Credit, 3 term hours.

The economic basis of marketing. The various services in the process of marketing such as grading and standardizing, packaging, processing, transporting, storing, financing, and distributing farm products. Essentials of success; fundamentals of co-operative marketing; marketing methods, marketing agencies; the market and price making; weaknesses in the present marketing system; organization the basis of improvement; future trading; government authority in relation to marketing; marketing by federation.

Text: *Marketing of Agricultural Products*, Hibbard.

(Required in XIV).

AGRICULTURAL ENGINEERING.

203S. Gas Engines. (5-5). Credit, 3 term hours.

This course deals with the farm gas engine, its operation, care and repair. The practice consists of the operation, testing and examination of the different types of farm gas engines. Laboratory fee, \$1.50.

(Required in XII; elective in C and in I).

318S. Farm Shop. (3-15). Credit, 4 term hours.

This course is especially designed for students intending to teach agricultural engineering in vocational schools. The work includes such subjects as are usually taught in vocational high schools, such as soldering, belt lacing, rope knots and splices, concrete construction, carpentry, and sufficient forging to enable the student to make ordinary farm repairs. Laboratory fee, \$2.50.

(Required in XII).

420S. Auto Mechanics. (5-10). Credit, 4 term hours.

The study of the construction, care, repair and operation of the gas engine and of the automobile.

The practice consists of the operation, testing and examination of the gas engine and the automobile. Laboratory fee, \$1.50.

(Required in XIII).

AGRONOMY.

102S. Field Crops. (6-5). Credit, 4 term hours.

This course includes a detailed study of the following field crops; cotton, corn, wheat, oats, rye, barley, rice, the saccharine

and non-saccharine sorghums, sugar cane and peanuts. Each crop is considered from the standpoint of origin, varieties, improvement, tillage practices, harvesting and uses.

Text: *Field Crops for the Cotton Belt*, Morgan.

In the laboratory, field, and greenhouse, the student makes a detailed study of the important characteristics of these crops, including varietal studies. Special consideration is given to the seeds of these crops, particularly as regards those points that determine value.

(Required in I).

301S. Soils. (6-5). Credit, 4 term hours.

This course gives the student a rather comprehensive knowledge of the soil and its management. It is given according to the following outline:

(a) The soil as a medium for root development, including a study of rock and its products; the soil mass, together with the physical properties of the soil and their modification; the organic content of the soil.

(b) The soil as a reservoir for water, including the functions of water in plant growth; the amount of water in the soil; the movement of soil water, and the control of soil water.

(c) Plant nutrients in the soil, including a careful study of both micro-organisms and macro-organisms, as they influence soil productiveness.

(d) The soil air; composition and functions of.

(e) The heat of the soil; comprising a study of the sources, functions and means of modifying soil temperature.

(f) External factors in soil management; tillage, crop adaptation, etc.

Text: *Soils*, Lyon, Fippin and Buckman.

305S. Genetics. (5-5). Credit, 3 term hours.

This course comprises a fundamental study of the resemblances and differences in individuals related by descent, to the end that the relationships may be accounted for.

The important divisions of the work as presented are as follows: Variation, including a statistical study of variation; the various phases of Mendelism, including the physical basis of Mendelism, independent Mendelian inheritance, linkage relations in Mendelism, the nature and expression of Mendelian factors, allelomorphous relationships in Mendelism; inheritance of sex and related phenomena; species hybridization; pure lines; mutations.

Text: *Genetics in Relation to Agriculture*, Babcock and Clausen.

In practice the student makes such studies in the laboratory,

greenhouse and field as will give him first-hand acquaintance with the phenomena of variation and heredity.

Prerequisite: Biology 101, 102, 201, 202.

(Required in I, Groups 4, 5, 7, 9).

ANIMAL HUSBANDRY.

302S. Animal Breeding. (5-5). Credit, 3 term hours.

A study of the principles of animal improvement which form the basis of proper selection and mating for the production of pure bred live stock and market animals. The course includes a discussion of the subjects of reproduction, variation, heredity, selection, and the various methods of breeding, which include line breeding, inbreeding, crossing, grading, and other subjects connected with the breeding and improvement of farm animals.

Text: *The Breeding of Animals*, Mumford.

Practice consists largely of a study of the results obtained with the various breeds comprising the College herds. Training is given in the use of herd books, which involves the tabulation of pedigrees of representatives of the different breeds.

Prerequisite: Biology 301, Agronomy 305.

(Required in I, groups 5, 7; XI).

303S. Animal Nutrition. (6-5). Credit, 4 term hours.

This subject involves a study of the fundamental principles of live stock feeding, including the composition and digestibility of feeding stuffs, the disposition made of the different feed constituents by the animal organisms, and, finally, the methods of calculating rations for the various classes of farm animals, cattle, horses, sheep, and swine. Students are required to use a textbook and that is supplemented by lectures.

Text: *Feeds and Feeding*, Henry and Morrison. Lectures.

The practice consists chiefly in calculating rations and in working out problems relating to the economic side of live stock feeding.

Prerequisite: Chemistry 206.

(Required in I, group 5).

201S. Farm Poultry. (5-5). Credit, 3 term hours.

This is a general course on farm poultry and treats of the breeds and types of poultry; the principles of breeding and mating of fowls; incubation and brooding; feeding for growth and egg production; winter and summer management; housing and hygiene; sanitation; disease; parasites and their treatment; preparing poultry for market; marketing. It deals with the practical application of these principles to general farm conditions.

Text: *Poultry Production*, Lippincott.



Summer Session students judging birds for egg production.

The practice work consists of the study of breeds and types, incubators and brooders, housing, judging of fancy and utility poultry, candling and grading of eggs and poultry products, killing and dressing poultry.

Required in XII; elective in I, C.

202S. Judging Breed Types of Horses, Cattle, Sheep, and Swine.

(5-5). Credit, 3 term hours.

The lectures in this course treat of the origin, history, characteristics and adaptability of the various breeds of live stock. As far as the equipment in live stock will permit, the student is shown by means of representative animals the best types of the breeds of cattle, horses, sheep and swine.

Text: *Types and Breeds of Farm Animals*, Plumb.

The score cards of the different breed associations are used in determining the merits of the animals, and these are further explained in the lectures. An important part of the practice consists of comparative judging similar to that of the show ring.

Prerequisite: Animal Husbandry 101, 102.

(Elective in I).

103S. Live Stock Production. (5-10). Credit, 4 term hours.

A general course briefly covering the various phases of beef

cattle and sheep production, including judging, breeding, care, and management. This course is especially designed to meet the needs of students taking Agricultural Education.

Text: Types and Market Classes of Live Stock, Vaughn.
(Required in XII).

409S. Animal Nutrition and Live Stock Feeding. (6-5). Credit, 4 term hours.

This is a combined course, involving the principles of animal nutrition and a study of the feeding of all classes of farm animals, cattle, horses, sheep, and swine. The subject of animal nutrition, the composition of available feeding stuffs, and the calculating of rations are treated fully.

Text: Feeds and Feeding, Abridged, Henry and Morrison.

The practice consists of calculating rations; studying the results of feeding tests conducted by this and other Experiment Stations; and studying practical feeding operations.

(Required in I, group 4; XI).



First prize Hereford herd, American Royal, Kansas City, Missouri, 1922. Fed, fed, and exhibited by the Animal Husbandry Department, A. and M. College of Texas.

104S. Live Stock Production (Hogs and Horses). (5-10). Credit 4 term hours.

This is a continuation of course 102, covering hogs and horses.

(Required in XII).

101S. Judging Market Types of Beef Cattle and Sheep. (0-10). Credit, 2 term hours.

The lectures are explantatory of the various classes and grades of beef cattle and sheep recognized in the leading stock markets. The points of these and their value to the stockman, the butcher and the consumer are fully discussed. The practice embraces a thorough training in the scoring of fat cattle and fat sheep; supplemented by the study of dressed beef carcasses as far as possible. Comparative judging constitutes an important part of the work.

Text: Types and Market Classes of Live Stock, Vaughn.

(Required in I, XIV, C).

BIOLOGY.**101S. General Botany. (5-10). Credit, 4 term hours.**

The aim of this course is to provide the student who looks forward to entering some field of work in agriculture with an accurate and thorough knowledge of living plants. The point kept steadily in view is, therefore, physiologic rather than anatomic. The first term begins with an outline of the external and internal form and structure necessary to the more extended study of life processes of plants. In the second term, types of various subdivisions of the plant kingdom are used to illustrate the great fundamental principles of development and adaptation, and to serve as a foundation for later work in classification.

The plan of the laboratory work is based on the inductive principle; the student is trained to acquire facts of development, structure and function by direct observation. Each student is required to keep a notebook in which he records by drawings and notes the results of his work.

Text: College Botany, Martin.

Laboratory fee, 50 cents each term.

(Required in I, XI, XII, XIV).

207S. General Zoology. (5-10). Credit, 4 term hours.

The essential aims and plan outlined in the work in botany are continued in this course. Especial attention is given to forms of economic importance. Types of the various great groups of animals are considered as illustrating origin, development and

distribution. Careful dissection and study of type forms, with notes and drawings are required in the laboratory work.

Laboratory fee, \$1.00.

Text: General Zoology, Pearse.

(Required in I, XII).

CHEMISTRY AND CHEMICAL ENGINEERING.

101S. Inorganic Chemistry. (6-8). Credit 4½ term hours.

In this course the foundation principles of all chemical activity are fully discussed and demonstrated. The chemical elements and their compounds are taken up separately and systematically. Industrial applications of the more important chemical processes are briefly described, and organic chemistry is touched upon. This course must precede all other chemical studies. An elementary course in physics should precede or accompany this course.

Text: General Chemistry, McPherson and Henderson.

General laboratory work, duplication of lecture experiments and simple tests of technical importance.

Laboratory fee, \$3.50 each term.

(Required in all four-year courses except X).

206S. Organic Chemistry. (6-5). Credit, 4 term hours.

The subject is treated primarily as a pure science. An effort is made to select for illustrations such compounds as are of interest to the student of agriculture.

Text: Organic Chemistry, Moore.

In the laboratory a study is made of the properties and typical reactions of the compounds discussed in the lectures.

Laboratory fee, \$2.50.

Prerequisite: Chemistry 101S, 120S.

DAIRY HUSBANDRY.

202S. Dairying. (5-5). Credit, 3 term hours.

The secretion of milk and the composition of milk and its products; the use and application of the lactometer in the determination of the total solids and adulteration of milk; the various methods of cream raising and separation; and the principles of making butter and ice cream on the farm and in the home.

Text: Milk and Its Products.

Laboratory fee, 50 cents.

DRAWING.

101S. Mechanical Drawing. (0-8). Credit, 1½ term hours.

Care and use of drawing instruments, simple exercises in the

use of drawing instruments, instrumental and free-hand lettering, geometrical constructions, construction of plane curves, orthographic and axonometric projections.

Text: Mechanical Drawing, Giesecke and Mitchell.

102S. Mechanical Drawing. (0-8). Credit, 1½ term hours.

Problems in descriptive geometry involving points, lines, planes, tangency, intersections of planes and solids, intersections of solids, development of surfaces, shades and shadows, linear perspective. This course is parallel to and is an application of courses 103S, and 104S.

Text: Instrumental Exercises, Descriptive Geometry, Mitchell.

Prerequisite: Drawing 103S.

103S. Descriptive Geometry. (5-0). Credit, 2 term hours.

Class-room exercises, quizzes and lectures on general and special problems relating to points, lines, planes and solids; problems in shades and shadows in perspective. Special attention is paid to the representation of objects by orthographic projection in the first and third angles.

Text: Descriptive Geometry, Giesecke and Mitchell.

104S. Descriptive Geometry. (5-0). Credit, 2 term hours.

A continuation of Drawing 103S.

105S. Free-hand Drawing. (0-3). Credit, ½ term hour.

Drawing from geometrical solids, common objects, plaster casts, still life, to study form, proportion, light and shade; in the second term special attention is given to measuring, dimensioning and describing machines, machine parts, engineering structures and details.

The course is varied to meet the practical needs of students in the different engineering departments.

106S. Free-hand Drawing. (0-3). Credit, ½ term hour.

A continuation of Drawing 105S.

201S. Mechanical Drawing. (0-8). Credit, 1½ term hours.

Standard conventional section lining, drawing of standard bolts, nuts, rivets and threads; helixes, elementary parts of machines and engineering structures; details and assemblages; Patent Office drawing, tracing, blue printing. The student is required to carefully sketch and measure his model in the drawing room, shop or field. From his dimensioned sketch he makes, on detail paper, traces and blue prints his working drawing.

The course is varied to meet the practical needs of students in the different engineering departments.

Text: Mechanical Drawing, Giesecke and Mitchell.

Reference text: Engineering Drawing, French.

Prerequisite: Drawing 101.

202S. Mechanical Drawing. (0-8). Credit, 1½ term hours.

A continuation of Drawing 201S.

317S. Mechanical Drawing. (0-8). Credit, 1½ term hours.

Elementary architectural drawing, including plans, elevations, sections, window and door details, structural steel construction, masonry construction, carpentry, etc.

318S. Machine Drawing. (0-8). Credit, 1½ term hours.

Correct representation of objects; approved methods of dimensioning drawings; sketching and measuring machine parts; standard conventions; cycloidal and helical curves; screw threads, spur wheels, bevel and worm gears, cam construction.

Text: To be announced.

Prerequisite: Drawing 201 or 101.

ECONOMICS.

202S. Business Law. (5-0). Credit, 2 term hours.

This course is especially fitted for those who plan to enter general business practice, but is important in all spheres of American life. Such subjects as the following are studied: The nature and scope of law, contracts, sales, agency, negotiable instruments, employment, partnership, personal property, real property, wills and inheritances, surety, bankruptcy, etc.

Text: Business Law, Conyngton and Bergh.

(Required in XIV).

306S. Fundamentals Principles. (8-0). Credit, 3 term hours.

This course consists of the theory of economic activities concerning production, distribution and consumption; and the practical problems of credit, banking, foreign exchange, monetary systems, co-operation, tariff, transportation, trusts, corporations, finance and taxation. The assignments in the text are supplemented by expositions and explanations by the instructor, and by reports by the students.

Text: Principles of Political Economy, Seager.

(Required in X, XIV).

ELECTRICAL ENGINEERING.**201S. Electricity and Magnetism. (6-10). Credit, 6 term hours.**

Lectures, recitations and problems in electricity and magnetism.

This includes a laboratory investigation of the phenomena studied in the text-book.

Laboratory fee, 75 cents.

Prerequisite: Mathematics 102, 103.

(Required in V).

206S. Motors, Wiring and Lighting. (5-5). Credit, 3 term hours.

An elementary course covering:

(a) A study of the characteristics of the more frequently used types of electric motors.

(b) Lectures on methods of electric wiring for lights and power.

(c) Lectures and recitations on the principles of illumination.

Elective in I.

Laboratory fee, \$1.00.

(Required in XIII).

ENGLISH.**103S. Rhetoric and Composition. (6-0). Credit, 3 term hours.**

This course includes recitations, readings from masterpieces of literature, and much composition, both oral and written.

(Required in all four-year courses; elective in C).

203S. English Composition. (5-0). Credit, 2 term hours.

In this course the student has frequent practice in the preparation of both oral and written reports on required English readings and on subject-matter related to his technical studies. Attention is also given to the writing of business letters.

Prerequisite: English 103, 104.

(Required in all four-year courses).

303S. Argumentation. (5-0). Credit, 2 term hours.

This course is like English 301-302, except that more time is available for reading and oral discussion. The work includes a study of the analysis of questions, and of evidence, briefing, and presentation.

Prerequisite: English 203-204.

(303: Required in IV, VI, VIII, IX, groups 1, 2, X, XV).

ENTOMOLOGY.

201S. General Entomology. (5-5). Credit, 3 term hours.

In this course the student is taught the systematic position of the various insects. The relation of the anatomy of insects to control measures is also studied. The life histories of the more common insects are given, together with the methods of control for the injurious forms.

Laboratory fee, 50 cents.

Text: *Elementary Entomology*, Sanderson and Jackson.
(Required in I).

304S. Apiculture. (5-5). Credit, 3 term hours.

This is an elementary course in beekeeping open to all four-year students. The course is arranged so as to give the student a working knowledge of beekeeping which will prepare him for conducting a small apiary in connection with general farm work or for entering commercial beekeeping as a vocation. The course includes a study of the life history of the honey bee, methods of making hives and equipment, and the control of bee diseases. The department is equipped with an apiary, hives, tools, wax presses, automatic extractors, and the standard equipment used in beekeeping.

Text: *Productive Beekeeping*, Pellet.
(Elective in I, X).

407S. Economic Entomology. (6-5). Credit, 4 term hours.

Special attention is given to the insects which are directly beneficial or injurious. A study is made of the life history of the important pests of farm crops, fruits, vegetables, and live stock. Methods of control and means of preventing insect outbreaks are given due consideration.

In the laboratory the student studies spraying machinery, fumigating apparatus and dusting machinery, the more important insecticides and makes and applies them when possible.

Text: *Pests of Farm, Orchard, and Garden*, Sanderson and Peairs.

(Elective in I, groups 4, 9).

FARM MANAGEMENT.

401S. Farm Management. (5-10). Credit, 4 term hours.

The application of the principles taught in the various agricultural and economic courses to the organization and administration of the individual farm business, the point of view being, "How can I plan and run my farm to achieve the greatest success?" Specific topics are: Farming as a business; types of

farming; size, diversity, and quality of business; farm layout and building arrangement; equipping a farm as to labor, work stock, power and machinery; forms of leasing; choosing and buying a farm; planning work and business transactions; using capital and credit; analyzing business to locate weaknesses; adapting business to changing conditions; planning the organization and management of specific farms.

Text: Farm Management, Warren.

Prerequisites: Three of the following: Agr. 301, 302; A. H. 303; Ec. 306.

(Required in I, XII, XV).

GEOLOGY.

201S. Physical Geography. (5-5) Credit, 3 term hours.

Outstanding physiographic processes and resultants; geographical features of the earth as a member of the universal family; oceanography relief operations; atmospheric agents and resultants; and the relations of these various physiographic influences upon life forms and human welfare.

Laboratory exercises appropriate to these lines of thought are followed out in as thorough manner as time will allow.

Laboratory fee, \$1.00.

Prerequisite: Chemistry 103, 104.

(Elective in X).

209S. General Geology. (6-5). Credit 4 term hours.

A critical introduction to dynamical, structural, and historical geology. The dominant geologic processes, together with their resultants, are emphasized. A general working knowledge of the economic and the other associated phases of geology is presented.

The laboratory work includes the megascopic identification of the more common rock-forming minerals and representative members of common rock groups; introductory map reading; and occasional field excursions.

Laboratory fee, \$1.50.

Prerequisite: Chemistry 101, 102.

(Required in I).

HISTORY.

305S. Citizenship. (6-0). Credit, 3 term hours.

The purpose of this course is to prepare the students to render effectively the public services of useful citizens: by helping them acquire the common fund of political knowledge which should be the asset of all citizens; by acquainting them while in college with the political issues of the day; by grounding them

in the fundamental principles of civil liberty and the rights of private property, and by helping them see how hardly democracy was won and how easily it may be lost.

(Required in XIII, XIV; elective in I. The same as History 306 which is required in all four-year Engineering courses, and the same as History 206, which is required in X).

307S. Europe Since 1815. (6-0). Credit, 3 term hours.

The aim of this course is to help the students acquire a comprehensive view of the forces and movements of the nineteenth century which culminated in the World War in the twentieth century; including the reaction of the Revolutionary and Napoleonic Era, the Industrial Revolution, democratic reforms, nationalism, commercialism, imperialism, international rivalries, the League of Nations, and reconstruction following the World War.

(Elective in all four-year courses, excepting X, XI, XII, XIII. The same as History 207, which is required in X).

HORTICULTURE.

201S. Plant Propagation and Orcharding. (5-5). Credit, 3 term hours.

Lectures and recitations on the fundamental principles and methods of plant propagation, including vegetables, fruits, and ornamentals. The methods of planting and managing the home orchard are also covered.

Lectures and recitations.

Practice is given in propagation of plants from seed, budding, grafting, and in planning, planting, pruning, spraying, and general care of the home orchard.

Text: Plant Propagation, Kains. Lectures.

Laboratory fee, 75 cents.

Prerequisite: Biology 101, 102.

(Required in I, XII).

202S. Vegetable Gardening. (5-5). Credit, 3 term hours.

Detailed instruction in planning, planting, equipping and operating vegetable gardens with special reference to the needs of the home. Canning and storage of vegetable crops for home use also receive consideration.

Text: Garden Farming, Corbett. Lectures and references.

The practice is devoted to planning, planting and cultivating a small garden, equipping, fertilizing, spraying, harvesting, erection of hotbeds and cold frames.

Laboratory fee, 50 cents.

(Elective in I, XII, XIV; required in C, M).

303S. Principles of Fruit Production. (6-5). Credit, 4 term hours.

This course includes a comprehensive study of orchard management including problems of location, soils, planting, cultivating, protection from insects and diseases, pruning, harvesting and marketing.

The laboratory work consists of the actual practice in orchard work from planting to marketing.

Text: Principles of Fruit Growing, Bailey. Lectures and recitations.

Laboratory fee \$1.00.

Prerequisite: Horticulture 201.

(Required in I, group 9; elective in I, XII, XIV; C).

310S. Commercial Vegetable Production. (5-5). Credit, 3 term hours.

In this course a study is made of the production of vegetables for market. Consideration is given climate, soil, equipment and storage, as they affect production and marketing in Texas and other States. The chief vegetable crops receive detailed study.

Lectures and recitations.

Practice is given in the actual production, harvesting and marketing of vegetable crops.

Laboratory fee, \$2.00.

Prerequisite: Horticulture 202.

(Required in I, group 9).

401S. Systematic Pomology. (6-5). Credit, 4 term hours.

A technical course covering deciduous fruits, their identification, classification, distribution, importance, and history, and a detailed study of the more important species and varieties.

Practice is given with such fruits as can be obtained during the season.

Laboratory fee, \$4.00.

Prerequisite: Horticulture 303.

(Required in I, group 9).

MATHEMATICS.**101S. Algebra. (6-0). Credit, 3 term hours.**

A rapid review of elementary topics, followed by the study of quadratic equations, the binomial theorem, variation, the progressions, complex numbers.

Text: College Algebra, Reitz and Crathorne. Supplementary exercises.

(Required in all four-year engineering courses and in IX, XIII; course 101 in X).

102S. Algebra. (6-0). Credit, 3 term hours.

A continuation of Mathematics 101S. Elementary theory of equations, logarithms, limits, undetermined co-efficients.

Review of certain topics of preceding courses.

Text: College Algebra, Rietz and Crathorne. Supplementary exercises.

(Required in all four-year engineering courses and in IX, XIII; course 101 in X).

103S. Plane Trigonometry. (6-0). Credit, 3 term hours.

Measurement of angles, review of logarithms, solution of right triangles, problems of heights and distances, properties of triangles, solution of oblique triangles, geometrical applications.

Text: Plane and Spherical Trigonometry, Taylor and Puryear.

(Required in all four-year engineering courses and in IX, X, XIII).

104S. Analytics. (6-0). Credit, 3 term hours.

The straight line, transformation of co-ordinates, circle, ellipse, parabola, hyperbola, graphs of trigonometric, logarithmic and exponential functions, tangents.

Review of certain topics of preceding courses.

Prerequisites: Mathematics 101, 103.

Text: Analytic Geometry, Riggs. Supplementary exercises.

(Required in all four-year engineering courses and in IX, XIII).

203S. Calculus. (6-0). Credit, 5 term hours.

Differentiation, limits, infinitesimals, integration, maxima and minima, areas, volumes, water pressure, work.

Review of certain topics of preceding courses.

Text: Calculus, March and Wolff. Supplementary exercises.

Prerequisite: Mathematics 104.

(Required in III, IV, V, IX, group 2).

204S. Calculus. (6-0). Credit, 5 term hours.

Introduction to solid geometry, moment of inertia, center of gravity, radius of curvature, Taylor's theorem, elementary examples of differential equations.

Review of certain topics of preceding courses.

Text: Calculus, March and Wolff. Supplementary exercises.

Prerequisite: Mathematics 203.

(Required in III, IV, V, IX, group 2).

MECHANICAL ENGINEERING.**101S. Elementary Mechanics. (3-0). Credit, 1 term hour.**

The work of this course consists of lectures, quizzes, and problems involving those principles of mechanics which are more commonly used in all branches of engineering and gives the student some contact with elementary engineering work.

Each student is required to keep a notebook for the special problems, which are numerous.

Text: Special pamphlet.

Prerequisite: Mathematics 103.

(Required in courses III, IV, V, VI, VIII, XIII, XV, M).

103S. Woodwork. (0-8). Credit, 1½ term hours.

Shop practice in the use of the common bench tools and power machinery for working in wood, as applied to joinery, elements of construction, and cabinet making. Practice in the use of shop records, systems, etc., is also given. Special work is provided for those who have had manual training before entering.

Laboratory fee, \$1.50.

(Required in courses, III, IV, V, VI, VIII, XIII, XV, M).



Over four-hundred students take a course in Forging each year.

104S. Forging. (0-8). Credit, 1½ term hours.

Shop practice in the use of blacksmith and general forge tools in the working of iron and steel. Also tempering, annealing, welding, case-hardening, etc.

Laboratory fee, \$1.50.

(Required in courses III, IV, V, VI, XIII, XV, M).

Note—Courses 103S and 104S together constitute a year's work, three hours a week. Students taking this work will be divided into two groups at the beginning of the first term; one group will begin with course 103S and the other with course 104S. At the beginning of the second term the groups will each change to the other work.

209S. Machine Shop. (0-8). Credit, 1½ term hours.

Practice in bench and machine tool work in metals. This includes clipping, scraping, filing, babbiting, pipe fitting, drilling, turning, boring, grinding, milling machine work, etc.

Laboratory fee, \$1.50.

Prerequisite: Mechanical Engineering 104.

(Required in III, VI, XIII).

201S. Pattern Making and Foundry Work. (0-8). Credit, 1½ term hours.

Shop practice in pattern making, moulding, and casting in iron, brass, etc.

Laboratory fee, \$2.00.

Prerequisite: Mechanical Engineering 103.

(Required in III, V, XIII).

311S. Carpentry and Cabinet Making. (0-8). Credit, 1½ term hours.

This course consists of the following two lines of practice:

(a) The carpentry of wood building construction, in which are included making out bills of lumber and hardware for building, laying out rafters, stairs, etc., methods of framing, inside finish, etc.

(b) Cabinet making, including wood seasoning, accurate construction in hardwood, wood finishing, making of mill bills, also a limited amount of designing of simple cabinets.

Laboratory fee, \$2.00.

Prerequisite: Mechanical Engineering 103.

(Required in XIII).

205S. Elementary Steam Engineering. (5-0). Credit, 2 term hours.

This course aims to give the student such a knowledge of

steam power plant equipment as will enable him to understand the operation of the same, and serve as a foundation for subsequent study and calculation along these lines. Valve gears, valve diagrams, and indicator practice are also included.

Text: Elementary Steam Engineering, Spangler.

Prerequisite: Mathematics 103, Mechanical Engineering 101, 102.

(Required in IV, VI, XIII).

206S. Steam Engineering. (6-8). Credit, 5½ term hours.

An elaboration of course 205S, with practice in mechanical engineering laboratory and power plant.

Laboratory fee, \$1.00.

Text: Heat Engines, Allen and Bursley.

Prerequisite: Mathematics 203 or 205.

(Required in VIII).

207S. Kinematics. (5-5). Credit, 3 term hours.

Without taking account of the strength of the structure, this course takes up the study of motion, velocity ratios, comparative forces, etc., in machines and their elemental parts.

Text: Mechanism, Keown.

Prerequisite: Mathematics 104.

(Required in III).

MODERN LANGUAGES.

315S. Spanish. (6-0). Credit, 3 term hours.

Grammar and easy reading.

425S. Spanish. (6-0). Credit, 3 term hours.

Reading of selected texts; composition; conversation. Parallel reading.

311S. French. (6-0). Credit, 3 term hours.

Grammar and easy reading.

(Required in IX, group I).

PHYSICS.

203S. General. (6-8). Credit, 4½ term hours.

A general course in mechanics, heat, light, electricity and magnetism for engineering students.

In this course particular stress is laid on the derivation of the various formulas necessary for a thorough understanding of the mathematical relations existing in physical determinations.

Much emphasis is placed on practical problems furnished by the instructors.

The practice includes about thirty experiments in the subjects named above. The work is, in general, quantitative.

Laboratory fee, \$1.00 each term.

Text: Reed and Guthe's College Physics.

Prerequisite: Mathematics 101, 103. (See Entrance Requirements).

(Required in all engineering courses except V).

204S. General. (6-8). Credit, 4½ term hours.

Same as course 203S.

103S. College Physics. (6-5). Credit, 4 term hours.

A general course in physics for students in general science courses and those preparing to enter a medical school.

This course includes the mechanics of solids, liquids and gases; and the phenomena of heat, light, sound, electricity and magnetism. Instruction is given by recitations, quizzes, problems and demonstrated lectures. Emphasis is laid upon the fundamental principles rather than the mathematical processes involved.

The practice includes about thirty experiments in the subjects named above.

Laboratory fee, 50 cents each term.

Text: Anderson's Physics, or equivalent.

Prerequisite: See entrance requirements.

(Elective in X).

RURAL SOCIOLOGY.

407S. Rural Sociology. (5-5). Credit, 3 term hours.

This course first analyzes the conditions, forces and agencies influencing the life of the country dweller and the country community. A detailed study is then made of a number of special problems related to the social side of country life, such as: population questions; cityward drift; town and country relationships; rural health problems; recreation; rural leadership; organizations, and community planning. Attention is also given to the social problems connected with the home; the school; the church; the press, and other social institutions.

Text: Gillette's Rural Sociology.

(Required in XIV).

415S. Agricultural Journalism. (5-5). Credit, 3 term hours.

The objectives of this course are: (1) to study the forces

molding public opinion, (2) to familiarize the student with the best principles and practices of newspaper writing, and especially the preparation of material for *Agricultural Papers*, and the *Country Weekly*. The part a County paper can play in County and community development is stressed.

Texts: Lipman, *Public Opinion*; Bing, *The Country Weekly*.
(Required in XIV, group 3).

310S. Rural Organizations. (5-5). Credit, 3 term hours.

After analyzing the interests needing organized effort—economic, civic, educational, social and religious—and determining the scale on which it is desirable to deal with each, a study is made of the historic development, activities, relationships, and plan of work of the various types of organizations found in different parts of the country. The principles basic to successful organizations are then formulated. Methods of developing organization leaders and gaining community support are outlined. Especial attention is given to the organization problems of the county agent, the agricultural teacher and other community workers. Each student is expected to work out detailed plans for some type of organization in which he is interested.

Text: Burr, *Rural Organization*; Kyle, *The Bureau Movement*, etc.

(Required in XIV).

312S. General Sociology. (6-0). Credit, 3 term hours.

This course analyzes the forces and processes determining the complexion of modern society; studies the principles basic to desirable social policies, and considers in detail some of the more outstanding present-day social problems.

Text: *Principles of Sociology*, Ross.

(Required in XIV, sessions 1922-23, 1923-24).

TEXTILE ENGINEERING.

101S. Cotton Classing. (0-5). Credit, 1 term hour.

This course includes practice in grading and stapling cotton, the methods of handling the crop from the field to the mill, and other subjects of general interest to a cotton student are presented in lecture form.

Laboratory fee, 50 cents each term.

(Required in I, XII, C).

VETERINARY ANATOMY.

52S. Animal Diseases. (6-5). Credit, 4 term hours.

A popular course on the common diseases of animals on the farm.

Laboratory fee, \$1.50.

Text: Principles of Veterinary Science, Hadley.
(Elective in C).

VETERINARY MEDICINE AND SURGERY.

371S. Clinics. (0-18). Credit, 3½ term hours.

**VOCATIONAL TEACHING. (AGRICULTURAL
EDUCATION).**

305S. Vocational Education. (6-0). Credit, 3 term hours.

It is the purpose of this course to give a clear understanding of the field of vocational education, to insure sympathy and enthusiasm for the introduction of vocational training in the public schools, to set up proper objectives and to indicate standards in methods, content, and in qualifications of teachers for agricultural, industrial, commercial, and home-making education.

(Required in I, group 2; XII, XIII; elective in I, Groups 4, 5, 7, 9, 10).

308S. Educational Psychology. (6-0). Credit, 3 term hours.

This is a beginning course in psychology with special emphasis on its application to the problems of teaching. Among the topics considered are the following: Instincts, individual differences, mental tests and measurements, habit formation, association, retention, attention and motivation, characteristics of adolescents and relation to methods of teaching and control.

(Required in I, group 2; XII, XIII; elective in I, groups 4, 5, 7, 9, 10, XIV).

402S. Administration of Vocational Agriculture. (6-0). Credit, 3 term hours.

This course is a study of the specific problems that confront the teacher in carrying on the work of the department of vocational agriculture in the high school. The analysis of the job of the farmer in a given community; the arrangement of the farm activities into seasonal sequence; the making of the teacher's annual plan; the selection, supervision and operation of home projects; the selection and management of library, shop and laboratory equipment; the organizing and conducting of part-time or evening short unit courses; the conducting of pre-vocational agricultural classes; and the relation of the teacher of vocational agriculture to his school and community, are some of the most important phases of the course. Students get practice in observation and supervised teaching in connection with this course.

(Required in I, group 2; XII; elective in I, groups 4, 5, 7, 9, 10, XIV).

418S. Visual Instruction. (3-10). Credit, 3 term hours.

The purpose of this course is to study the theory and practice of visual instruction and to acquire skill in the preparation and use of material for visual instruction. The course includes the designing and making of charts, use of the camera, making negatives and lantern slides, coloring lantern slides, use of stencils, mimescope and projection lantern, operation and care of motion picture machine, graphic representation of data and the use of the cartoon. Instruction is given in preparation and display of material for fairs and exhibits.

(Elective in I, group a; XII, XIII, XIV).

VOCATIONAL TEACHING. (INDUSTRIAL EDUCATION).**305S. Vocational Education. (6-0). Credit, 3 term hours.**

For description of this course see page 35.

310S. Educational and Vocational Guidance. (6-0). Credit, 3 term hours.

This course includes a survey of the recent development of educational and vocational guidance within and outside of the schools, information on the common occupations and their requirements, an analysis of personal characteristics; try-out methods; value of opportunity and co-operative part-time classes; value of cumulative school records; methods of keeping records; opportunities for educational and vocational guidance; vocational guidance through literature; need for follow-up work in vocational counselling; a study of psychological, industrial and commercial tests.

(Elective in I, group 2; XII, XIII, XIV).

311S. Job Analysis. (6-0). Credit, 3 term hours.

In this course emphasis is placed upon the job analysis and its importance as the foundation for all lesson planning. An analysis of some of the more important industries in which the members of the class are interested, such as woodworking, metal working, printing, electrical construction and operation, automobile construction and repair, is made. Important type jobs, as represented by the evening trade extension part-time and industrial courses, are analyzed as to their operations, trade knowledge, and teaching points, members of the class choosing the type jobs for analysis in which they are most interested.

416S. Administration and Supervision of Industrial Education. (6-0). Credit, 3 term hours.

This course deals with the various problems encountered in introducing industrial education into a school system and in de-

veloping the work in its varied forms. Among the topics discussed are: The place of industrial education in the junior high school as an aid toward educational guidance into the vocations and avocations of life; organization of courses of study for junior high schools, senior high schools, technical schools, trade schools, and corporation schools; safety first; plans and equipment; selection of teachers, improvement of teachers in service; formulating programs; selection of text-books; class room management. (Required in XIII).

423S. Psychology Applied to Industry. (6-0). Credit, 3 term hours.

In this course there is direct application of the fundamental principles of psychology to industry. It is planned for executives of industry.

The course will include the relation of the nervous system to the mind; instincts, imitation, habit formation, association, imagination, memory, suggestion and interest factors as applied to increased quality and quantity of production, efficient training of workers, reduction of turnover; co-operation and effective handling of men; suggestibility as related to age, temperament and sex, to safety first, to transfer and promotion, to co-operation of workers; ways in which reasoning, judgment and power of initiative can be developed in workers; possible psychological tests for ascertaining grades of intelligence and individual difference of workers, value of such tests.

424S. Training and supervising Workers in Industrial Plants. (6-0). Credit, 3 term hours.

This course is planned for high grade engineering students in their junior and senior years who wish to increase their future opportunities for promotion as executive in the many fields of engineering activities. This course includes a brief summary of the development of training in industry, including corporation schools, vestibule schools, foreman conferences, job analysis, instruction on the job, and effective handling of employees.

(Elective in XIII, Senior Elective in all Engineering Courses).

COURSES OFFERED IN INDUSTRIAL EDUCATION IN OTHER DEPARTMENTS.

Agricultural Engineering 420S. Auto Mechanics. See page 15.

Drawing. See pages, 21, 22, 23.

Electrical Engineering. See page 24.

Mechanical Engineering. See pages 30, 31, 32.

GRADUATE COURSES.

Administration.—The regulations concerning graduate studies and all matters relating thereto are administered by the Committee on Graduate Studies.

Advanced Degrees.—The College offers graduate courses leading to advanced degrees as follows: Master of Science (M. S.), Chemical Engineer (Ch. E.), Civil Engineer (C. E.), Electrical Engineer (E. E.), Mechanical Engineer (M. E.).

Admission.—In order to be admitted to a course of study leading to an advanced degree, the candidate must satisfy the following requirements:

1. He must be a graduate of this College or of some other institution approved by the Faculty.

2. His undergraduate work must be of such high order as to satisfy the committee that he is qualified by native ability and by training to pursue graduate studies with profit and with credit. In case his undergraduate work does not fully meet this requirement, the committee may require the completion of additional undergraduate work with a grade of at least B.

Application should be made in advance to the chairman of the committee and in case the candidate comes from another institution, his application must be accompanied by a complete transcript of his undergraduate record, properly certified.

Registration.—Graduate students must register at the beginning of each term at the office of the Registrar.

Studies.—(a) For the degree of Master of Science in Agriculture or in Agricultural Education the candidate must choose from the graduate courses listed under the several departments a major subject and two minor subjects; his choice to be subject to the approval of the heads of the departments concerned and of the committee. For each hour of theory the student will be expected to devote to preparation six hours for the major subject and three hours for each minor subject. In the summer session, the completion of one term's work in a major subject requires twelve weeks. One term's work in a minor subject may be completed in twelve weeks, or, under certain conditions as to extra time, in six weeks. In the latter case, four hours preparation will be required for each hour of theory.

(b) For the advanced degrees in engineering and in architecture the courses of study are shown under "Curricula" in the catalogue for the regular session.

Residence.—Advanced degrees will not be conferred except after a residence of at least one year at the College. For candi-

dates engaged in teaching or other regular employment, the period of residence will be increased to such extent as the committee may determine. The residence requirement may be satisfied by residence during three summer sessions of twelve weeks each.

The number of graduate courses offered in the summer session is limited, and application should be made *at least one month in advance*.

Other Regulations.—Other regulations, which need not be repeated here, are to be found in the catalogue of the regular session.

Courses Offered in the Summer Session.—The following graduate courses are described under the several departments in the catalogue of the regular session. The list is provisional only, and it is not to be assumed that all the courses will be offered in any one summer session. As stated above, application for any of these courses must be made at least one month in advance.

Provisional List of Graduate Courses.

Agricultural Engineering 501S, Major; 501aS, Minor. Advanced Drainage and Irrigation.

Agronomy 501S, Major; 501aS, Minor. Advanced Farm Crops.

Agronomy 503S, Major; 503aS, Minor. Advanced Genetics.

Agronomy 505S, Major; 505aS, Minor. Advanced Soils.

Animal Husbandry 501S, Major; 501aS, Minor. Advanced Animal Nutrition.

Biology 501S, Major; 501aS, Minor. Vegetable Morphology.

Biology 503S, Major; 503aS, Minor. Advanced Vertebrate Zoology.

Biology 505S, Major; 505aS, Minor. Advanced Bacteriology.

Chemistry 501S, Major; 501aS, Minor. Advanced Agricultural Chemistry.

Dairy Husbandry 501S, Major; 501aS, Minor. Advanced Dairy Husbandry.

Entomology 501S, Major; 501aS, Minor. Research Entomology.

Entomology 505S, Major; 505aS, Minor. Advanced Apiculture.

Entomology 507S, Major; 507aS, Minor. Economic Entomology.

Horticulture 501S, Major; 501aS, Minor. Advanced Fruit Growing.

Horticulture 503S, Major; 503aS, Minor. Advanced Vegetable Gardening.

Horticulture 505S, Major; 505aS, Minor. Advanced Landscape Art.

Rural Sociology 501S, Major; 501aS, Minor. Advanced Rural Sociology.

Rural Sociology 503S, Major; 503aS, Minor. Country Life Tendencies.

Vocational Teaching 501S, 502S, Major; 501aS, 502aS, Minor. Agricultural Instruction.

Vocational Teaching 503S, 504S, Major; 503aS, 504aS, Minor. Agricultural Extension and Demonstration.

Vocational Teaching 505S, 506S, Major; 505aS, 506aS, Minor. Organization and Management of Teacher Training Departments.

Vocational Teaching 507S, Major; 507aS, Minor. Direction and Supervision of Vocational Agriculture.

SCHEDULE OF COURSES IN THE COLLEGE DIVISION.

(First Six Weeks' Term).

Theory.

7:30—Agronomy 301S, Soils, daily.

Animal Husbandry 103S, Live Stock Production (Beef Cattle and Sheep), daily, except Saturday.

Animal Husbandry 104S, Live Stock Production (Hogs and Horses), daily, except Saturday.

Animal Husbandry 202S, Breed Types of Horses, Cattle, Sheep and Swine, daily, except Saturday.

Mathematics 101S, Algebra, daily.

Mathematics, 203S, Calculus, daily.

Mechanical Engineering 206S, Steam Engineering, daily.

Modern Languages 315S, Spanish, daily.

Physics 203S, General, daily.

Rural Sociology 415S, Agricultural Journalism, daily, except Saturday.

Veterinary Anatomy 52S, Animal Diseases, daily.

Vocational Teaching 423S, Psychology Applied to Industries, daily.

Vocational Teaching 418S, Visual Instruction, M., W., F.

Vocational Teaching 305S, Vocational Education, daily.

8:30—Agricultural Engineering 203S, Gas Engines, daily, except Saturday.

Agronomy 305S, Genetics, daily, except Saturday.

Animal Husbandry 104S, Live Stock Production, (Hogs and Horses), daily, except Saturday.

Animal Husbandry 302S, Animal Breeding, daily, except Saturday.

Biology 101S, General Botany, daily, except Saturday.

Biology 103S, General Botany, daily, except Saturday.

Economics 306S, Fundamental Principles, daily.

Electrical Engineering 201S, Electricity and Magnetism daily.

Entomology 304S, Apiculture, daily, except Saturday.
Farm Management 401S, Farm Management, daily, except Saturday.
Geology 209S, General Geology, daily.
Horticulture 303S, Principles of Fruit Production, daily.
Mathematics 103S, Plane Trigonometry, daily.
Modern Languages 425S, Spanish, daily.
Rural Sociology 310S, Rural Organizations, daily, except Saturday.
Vocational Teaching 416S, Administration and Supervision of Industrial Education, daily.

9:30—Agricultural Engineering 420S, Auto Mechanics, daily except Saturday.

Agronomy 102S, Field Crops, daily.
Animal Husbandry 303S, Animal Nutrition, daily.
Chemistry 101S, Inorganic Chemistry, daily, (Section 1).
Chemistry 103S, Inorganic Chemistry, daily, (Section 1).
Chemistry 206S, Organic Chemistry, daily.
Dairy Husbandry 202S, Dairying, daily, except Saturday.
English 203S, English Composition, daily, except Saturday.
History 307S, Europe Since 1815, daily.
Horticulture 202S, Vegetable Gardening, daily, except Saturday.
Horticulture 401S, Systematic Pomology, daily.
Mathematics 104S, Analytics, daily.
Mechanical Engineering, 205S, Elementary Steam Engineering, daily, except Saturday.
Modern Languages 311S, French, daily.
Rural Sociology 407S, Rural Sociology, daily, except Saturday.
Vocational Teaching 308S, Educational Psychology, daily.
Vocational Teaching 417S, Lesson Planning and Methods of Teaching Industrial Arts, daily.

10:30—Agricultural Economics 401S, Marketing, daily.
Economics 202S, Business Law, daily, except Saturday.
Entomology 201S, General Entomology, daily, except Saturday.
English 303S, Argumentation, daily, except Saturday.
History 305S, Citizenship, daily.
Horticulture 201S, Plant Propagation and Orcharding, daily, except Saturday.
Horticulture 310S, Commercial Vegetable Production, daily, except Saturday.
Mathematics 204S, Calculus, daily.
Mathematics 102S, Algebra, daily.

Mechanical Engineering 207S, Kinematics, daily, except Saturday.

Physics 204S, General, daily.

Rural Sociology 312S, General Sociology, daily.

Vocational Teaching 310S, Educational and Vocational Guidance, daily.

11:30—Agricultural Economics 301S, Agricultural Economics, daily, except Saturday.

Animal Husbandry 409S, Animal Nutrition and Live Stock Feeding, daily.

Biology 207S, General Zoology, daily, except Saturday.

Chemistry 101S, General Inorganic Chemistry, daily, (Section 2).

Economics 306S, Fundamental Principles, F., S.

Electrical Engineering 206S, Motors, Wiring and Lighting, daily, except Saturday.

English 103S, Rhetoric and Composition, daily.

Entomology 407S, Economic Entomology, daily.

Geology 201S, Physical Geology, daily, except Saturday.

Mechanical Engineering 101S, Elementary Mechanics, M., W., F.

Physics 103S, College Physics, daily.

Vocational Teaching 402S, Administration of High School Agriculture, daily.

Vocational Teaching 311S, Job Analysis, daily.

Vocational Teaching 424S, Training and Supervising Workers in Industrial Plants, daily.

1:30—Agricultural Engineering 318S, Farm Shops, M., W., F.

Animal Husbandry 201S, Farm Poultry, daily, except Saturday.

Practice.

7:30—Agronomy 102S, Field Crops, S.

Dairy Husbandry 202S, Dairying, S.

Entomology 201S, General Entomology, S.

8:30—Agronomy 102S, Field Crops, S.

Animal Husbandry 103S, Live Stock Production (Beef Cattle and Sheep), daily except Saturday.

Dairy Husbandry 202S, Dairying, S.

Entomology 201S, General Entomology, S.

9:30—Animal Husbandry 103S, Live Stock Production (Beef Cattle and Sheep), daily except Saturday.

Animal Husbandry 202S, Breed Types of Horses, Cattle Sheep and Swine, S.

Dairy Husbandry 202S, Dairying, S.

Electrical Engineering 206S, Motors, Wiring and Lighting, S.

Entomology 201S, General Entomology, S.

- Horticulture 303S, Principles of Fruit Production, S.
 Rural Sociology 407S, Rural Sociology, S.
- 10:30—Animal Husbandry 202S, Breed Types of Horses, Cattle
 Sheep and Swine, F., S.
 Chemistry 206S, Organic Chemistry, S.
 Electrical Engineering 206S, Motors, Wiring, and Light-
 ing, S.
 Horticulture 303S, Principles of Fruit Production, S.
 Rural Sociology 407S, Rural Sociology, S.
- 11:30—Animal Husbandry 202S, Breed Types of Horses, Cattle,
 Sheep and Swine, F., S.
 Chemistry 206S, Organic Chemistry, S.
 Electrical Engineering 206S, Motors, Wiring and Light-
 ing, S.
 Horticulture 303S, Principles of Fruit Production, S.
 Rural Sociology 407S, Rural Sociology, S.
 Vocational Teaching 418S, Visual Instruction, T., Th.
- 1:30—Agricultural Engineering 203S, Gas Engines, M., W.
 Agronomy 301S, Soils, T., Th.
 Agronomy 305S, Genetics, W., F.
 Animal Husbandry 302S, Animal Breeding, W., F.
 Animal Husbandry 303S, Animal Nutrition, T., Th.
 Animal Husbandry 409S, Animal Nutrition and Live
 Stock Feeding, T., Th.
 Biology 101S, General Botany, daily, except Saturday.
 Biology, 207S, General Zoology, daily, except Saturday.
 Chemistry 101S, Inorganic Chemistry, M., T., W., Th.,
 (Section 2).
 Electrical Engineering 201S, Electricity and Magnetism,
 daily, except Saturday.
 Entomology 201S, General Entomology, F.
 Entomology 304S, Apiculture, T., Th.
 Geology 201S, Physical Geography, M., W.
 Horticulture 201S, Plant Propagation and Orcharding,
 M., W.
 Horticulture 202S, Vegetable Gardening, T., Th.
 Horticulture 303S, Principles of Fruit Production, F.
 Physics 103S, College Physics, W., F.
 Rural Sociology 407S, Rural Sociology, M.
 Rural Sociology 415S, Agricultural Journalism, T., Th.
 Veterinary Anatomy 52S, Animal Diseases, T., Th.
 Vocational Teaching 418S, Visual Instruction, T., Th.
- 2:30—Agricultural Economics 301S, Agricultural Economics,
 M., W.
 Agricultural Engineering 203S, Gas Engines, M., W.
 Agricultural Engineering 318S, Farm Shop, daily, except
 Saturday.

Agronomy 102S, Field Crops, M.
 Agronomy 301S, Soils, T., Th.
 Agronomy 305S, Genetics, W., F.
 Animal Husbandry 302S, Animal Breeding, W., F.
 Animal Husbandry 303S, Animal Nutrition, T., Th.
 Animal Husbandry 201S, Farm Poultry, T.
 Animal Husbandry 409S, Animal Nutrition and Live
 Stock Feeding, T., Th.
 Biology 101S, General Botany, daily, except Saturday.
 Biology 207S, General Zoology, daily, except Saturday.
 Chemistry 101S, Inorganic Chemistry, M., T., W., Th.,
 (Section 2).
 Chemistry 206S, Organic Chemistry, F.
 Electrical Engineering 201S, Electricity and Magnetism,
 daily, except Saturday.
 Entomology 201S, General Entomology, F.
 Entomology 304S, Apiculture, T., Th.
 Entomology 407S, Economic Entomology, W.
 Geology 201S, Physical Geography, M., W.
 Geology 209S, General Geology, Th.
 Horticulture 201S, Plant Propagation and Orchardling,
 M., W.
 Horticulture 202S, Vegetable Gardening, T. Th.,
 Horticulture 310S, Commercial Vegetable Production, W.
 Horticulture 401S, Systematic Pomology, M.
 Horticulture 303S, Principles of Fruit Production.
 Physics 103S, College Physics, W., F.
 Rural Sociology 407S, Rural Sociology, M.
 Rural Sociology 415S, Agricultural Journalism, T., Th.
 Rural Sociology 310S, Rural Organizations, W.
 Veterinary Anatomy 52S, Animal Diseases, T., Th.
 Vocational Teaching 418S, Visual Instruction, T., Th.

3:30—Agricultural Economics 301S, Agricultural Economics,
 M., W.

Agricultural Engineering 203S, Gas Engines, M.
 Agricultural Engineering 318S, Farm Shop, daily, except
 Saturday.
 Agricultural Engineering 420S, Auto Mechanics, daily,
 except Saturday.
 Agronomy 102S, Field Crops, M.
 Agronomy 301S, Soils, T.
 Agronomy 305S, Genetics, F.
 Animal Husbandry 101S, Judging Market Types of Beef
 Cattle and Sheep, daily, except Saturday.
 Animal Husbandry 104S, Live Stock Production (Hogs
 and Horses), daily, except Saturday.

- Animal Husbandry 201S, Farm Poultry, T., Th.
Animal Husbandry 302S, Animal Breeding, F.
Animal Husbandry 303S, Animal Nutrition, T.
Animal Husbandry 409S, Animal Nutrition and Live Stock Feeding, T.
Chemistry 101S, Inorganic Chemistry, M., T., W., Th., (Section 1).
Chemistry 206S, Organic Chemistry, F.
Dairy Husbandry 202S, Dairying, F.
Electrical Engineering 206S, Motors, Wiring, and Lighting, W.
Entomology 304S, Apiculture, T.
Entomology 407S, Economic Entomology, W., F.
Farm Management 401S, Farm Management, daily, except Saturday.
Geology 201S, Physical Geography, M.
Geology 209S, General Geology, T., Th.
Horticulture 201S, Plant Propagation and Orchardling, M.
Horticulture 202S, Vegetable Gardening, T.
Horticulture 310S, Commercial Vegetable Production, W., F.
Horticulture 401S, Systematic Pomology, M., W.
Physics 203S, General M., T., W., Th.
Physics 204S, General, M., T., W., Th.
Physics 103S, College Physics, F.
Rural Sociology 415S, Agricultural Journalism, T.
Rural Sociology 310S, Rural Organizations, W., F.
Veterinary Anatomy 52S, Animal Diseases, T.
Vocational Teaching 418S, Visual Instruction, T., Th.
- 4.30—Agricultural Economics 301S, Agricultural Economics, M.
Agricultural Engineering 318S, Farm Shop, daily, except Saturday.
Agricultural Engineering 420S, Auto Mechanics, daily, except Saturday.
Agronomy 102S, Field Crops, M.
Animal Husbandry 101S, Judging Market Types of Beef Cattle and Sheep, daily, except Saturday.
Animal Husbandry 104S, Live Stock Production (Hogs and Horses), daily, except Saturday.
Animal Husbandry 201S, Farm Poultry, T., Th.
Chemistry 101S, Inorganic Chemistry, M., T., W., Th., (Section 1).
Chemistry 206S, Organic Chemistry, F.
Dairy Husbandry 202S, Dairying, F.
Electrical Engineering 206S, Motors, Wiring, and Lighting, W.

Entomology 407S, Economic Entomology, W., F.
 Farm Management 401S, Farm Management, daily, except Saturday.
 Geology 209S, General Geology, T., Th.
 Horticulture 310S, Commercial Vegetable Production, W., F.
 Horticulture 401S, Systematic Pomology, M., W.
 Physics 203S, General, M., T., W., Th.
 Physics 204S, General, M., T., W., Th.
 Rural Sociology 310S, Rural Organizations, W. F.
 Vocational Teaching 418S, Visual Instruction, T., Th.

The time for each course in the following list will be arranged when the course is asked for:

Drawing, all courses.

Mechanical Engineering, All courses.

Textile Engineering 101S, Cotton Classing.

Veterinary Medicine and Surgery 371S, Clinics.

SECOND SIX WEEKS' TERM.

AGRICULTURAL ENGINEERING.

314S. Tractors. (5-10). Credit, 4 term hours.

A study of the design, operation and repair of different types of gas tractors.

The practice consists of a study of the different parts of gas tractors, with tests. Laboratory fee, \$2.00.

Prerequisite: Agricultural Engineering 203.

(Required in I, group 3; elective in all other groups and in C).

204S. Farm Machinery. (5-5). Credit, 3 term hours.

The practical study of all type sof farm machinery, tilling, seeding, cultivating, harvesting, fertilizing, and power machinery.

The practical study of all types of farm machinery, tilling, seeding, cultivating, harvesting, fertilizing, and power machinery.

Demonstrations and tests are made under field conditions.

(Required in I).

AGRONOMY.

302S. Farm Crops. (6-5). Credit, 4 term hours.

In this course all the leading field crops are studied with regard to structure, composition, races and varieties, breeding or improvement, soil, rotations, fertilizers, together with tillage operations, harvesting, and marketing.



A section of the Agronomy Field Laboratory. This laboratory is used for instructional purposes.

Text: *Field Crops for the Cotton Belt*, Morgan; *Forage Plants and Their Culture*, Piper.

In the laboratory, field, and greenhouse, the student makes a careful study of the leading characteristics of the different crops; seeds are studied as regards purity, and other points that determine value.

Prerequisite: Agronomy 301; Biology 101S, 102S.

BIOLOGY.

102S. General Botany. (5-10). Credit, 4 term hours.

The aim of this course is to provide the student who looks forward to entering some field of work in agriculture with an accurate and thorough knowledge of living plants. The point kept steadily in view is, therefore, physiological rather than anatomic. The first term begins with an outline of the external and internal form and structure necessary to the more extended study of life processes of plants. In the second term, types of various subdivisions of the plant kingdom are used to illustrate the great fundamental principles of development and adaptation, and to serve as a foundation for later work in classification.

The plan of the laboratory work is based on the inductive principle; the student is trained to acquire facts of development,

structure and function by direct observation. Each student is required to keep a notebook in which he records by drawings and notes the results of his work.

Text: College Botany, Martin.

Laboratory fee, 50 cents each term.

(Required in I, XI, XII, XIV).

CHEMISTRY AND CHEMICAL ENGINEERING.

102S. Inorganic Chemistry. (6-8). Credit, 4½ term hours.

In this course the foundation principles of all chemical activity are fully discussed and demonstrated. The chemical elements and their compounds are then taken up separately and systematically. Industrial applications of the more important chemical processes are briefly described, and organic chemistry is touched upon. This course must precede all other chemical studies. An elementary course in physics should precede or accompany this course.

Text: General Chemistry, McPherson and Henderson.

General laboratory work, duplication of lecture experiments and simple tests of technical importance.

Laboratory fee, \$3.50 each term.

(Required in all four-year courses except X).

309S. Agricultural Chemistry. (6-8). Credit, 4½ term hours.

This is a study of the fundamental chemical principles of agriculture, and in addition to giving the student a grasp of the application of chemistry, it helps to understand the chemical terms used in Experiment Station literature. The chemistry of plant substances, soils, irrigation water, fertilizers, insecticides, and fungicides is studied.

The laboratory work serves to familiarize the student with the composition and behavior in the laboratory of many materials important in agriculture. It consists of the chemical analysis of feeds, soils, fertilizers, insecticides and fungicides.

Text: Chemistry of Agriculture, Stoddard.

Laboratory Manual of Agricultural Chemistry, Hedges and Bryant.

Laboratory fee, \$3.00.

Prerequisite: Chemistry 206S.

CIVIL ENGINEERING.

204S. Analytical Mechanics. (10-0). Credit, 4 term hours.

A study of the fundamental principles of mechanics, with numerous problems showing their application in engineering. Both kinetics and statics are considered, but especial emphasis is put upon the applications of the principles of static equilibrium.

Text: Applied Mechanics, Poorman.

Prerequisite: Mathematics 203; to be accompanied by Mathematics 204.

DRAWING.

101S. Mechanical Drawing. (0-8). Credit, 1½ term hours.

This course is the same as 101S, page 21.

102S. Mechanical Drawing. (0-8). Credit, 1½ term hours.

This course is the same as 102S, page 22.

103S. Descriptive Geometry. (5-0). Credit, 2 term hours.

This course is the same as 103S, page 22.

104S. Descriptive Geometry. (5-0). Credit, 2 term hours.

This course is the same as 104S, page 22.

105S. Free-hand Drawing. (0-3). Credit, ½ term hour.

This course is the same as 105S, page 22.

106S. Free-hand Drawing. (0-3). Credit, ½ term hour.

This course is the same as 106S, page 22.

201S. Mechanical Drawing. (0-8). Credit, 1½ term hours.

This course is the same as 201S, page 22.

202S. Mechanical Drawing. (0-8). Credit, 1½ term hours.

This course is the same as 202S, page 23.

317S. Mechanical Drawing. (0-8). Credit, 1½ term hours.

This course is the same as 317S, page 23.

318S. Machine Drawing. (0-8). Credit, 1½ term hours.

ELECTRICAL ENGINEERING.

202S. Elementary Electrical Engineering. (5-10). Credit, 4 term hours.

Lectures and recitations on simple electric circuits, primary and secondary batteries, battery charging, simple telephone circuits, the magnetic circuit, inductance and capacity.

A short time is devoted to the study of the National Electric Code, and of methods of wiring.

The practice is intended to clarify the ideas received by the student in the class room. It includes the accurate measure-

ment of various electrical quantities, such as resistance, inductance, capacity, and the effect of temperature, position, etc., on these quantities; a study of the various types of batteries to determine their adaptability to different uses; calibration and repair of instruments, such as ammeters, voltmeters, and wattmeters; tests of the magnetic properties of iron.

Laboratory fee, 75 cents.

Prerequisite: Electrical Engineering 201S; Mathematics 104S.

ENGLISH.

104S. Rhetoric and Composition. (6-0). Credit, 3 term hours.

A continuation of English 103S, page 24.

204S. English Composition. (5-0). Credit, 2 term hours.

A continuation of English 203S, page 24.

304S. Argumentation. (5-0). Credit, 2 term hours.

A continuation of English 303S, page 24.

MATHEMATICS.

102S. Algebra. (6-0). Credit, 3 term hours.

This course is the same as 102S, page 29.

104S. Analytics. (6-0). Credit, 3 term hours.

This course is the same as 104S, page 29.

204S. Calculus. (6-0). Credit, 5 term hours.

This course is the same as 204S, page 29.

VETERINARY MEDICINE AND SURGERY.

372S. Clinics. (0-18). Credit, 3½ term hours.

VOCATIONAL TEACHING.

403S. Rural Education. (6-0). Credit, 3 term hours.

The primary purpose of this course is to make a study of rural education in its broad sense, with a view of preparing teachers and extension workers for more efficient service in rural communities. Some of the topics discussed are: Changes in rural education and the rural home, together with the factors affecting such changes; the school as a community center; other agencies to be co-ordinated; community play and recreation and the redirected school.

(Elective in groups XII, XIV).

311S. Job Analysis. (6-0) Credit, 3 term hours.

In this course emphasis is placed upon the job analysis and its importance as the foundation for all lesson planning. An analysis of some of the more important industries in which the members of the class are interested such as woodworking, metal working, printing, electrical construction and operation, automobile construction and repair, is made. Important type jobs, as represented by the evening trade extension part-time and industrial courses, are analyzed as to their operations, trade knowledge, and teaching points, members of the class choosing the type jobs for analysis in which they are most interested.

(Required in XIII).

417S. Lesson Planning and Methods of Teaching Industrial Arts. (5-5). Credit, 3 term hours.

This course deals with the effective planning of a lesson in relation to its aim. It includes the planning of definite courses and the arrangement of these courses in effective instructional order, members of the class choosing special industrial education courses in which they are most interested. Emphasis is placed on the details in planning a definite lesson, taking into consideration the varying technical development of the students in the class. Methods of teaching and their value under different teaching conditions are discussed.

(Required in XIII).

421S. Class Room Organization and Management. (5-5). Credit, 3 term hours.

The vital relationship of efficient organization and management to the work of the class room is emphasized. Some of the topics discussed are the industrial education instructor's relation to the school system and community; most effective organization of the equipment and economic way of securing materials as teaching aids; planning of daily programs; lesson planning; discipline and individual adjustment; grading, records, and reports; opportunities for educational guidance and aids; opportunities for improvement and advancement in service.

(Required in XIII).

305S. Vocational Education. (6-0). Credit, 3 term hours.

For description of this course, see page 35.

SCHEDULE OF COURSES FOR SECOND SIX WEEKS' TERM.

Theory.

7:30—Agricultural Engineering 204S, Farm Machinery, daily, except Saturday.

Agronomy 302S, Farm Crops, daily.

Mathematics 102S, Algebra, daily.

Vocational Teaching 421S, Class Room Organization and Management, daily, except Saturday.

8:30—Chemistry 102S, Inorganic Chemistry, daily.

Chemistry 309S, Agricultural Chemistry, daily.

Civil Engineering 204S, Analytical Mechanics, daily, except Saturday.

Electrical Engineering 202S, Elementary Electrical Engineering, daily, except Saturday.

Vocational Teaching 311S, Job Analysis, daily.

9:30—Agricultural Engineering 314S, Tractors, daily except Saturday.

Biology 102S, General Botany, daily, except Saturday.

Civil Engineering 204S, Analytical Mechanics, daily, except Saturday.

English 204S, English Composition, daily, except Saturday.

Vocational Teaching 417S, Lesson Planning and Methods of Teaching Industrial Arts, daily, except Saturday.

10:30—Mathematics 104S, Analytics, daily.

English 304S, Argumentation, daily, except Saturday.

Vocational Teaching 403S, Rural Education, daily.

11:30—English 104S, Rhetoric and Composition, daily.

Mathematics 204S, Calculus, daily.

Vocational Teaching 305S, Vocational Education, daily.

Practice.

9:30—Agricultural Engineering 204S, Farm Machinery, S.

Agronomy 302S, Farm Crops, S.

10:30—Agricultural Engineering 204S, Farm Machinery, S.

Agronomy 302S, Farm Crops, S.

11:30—Agricultural Engineering 204S, Farm Machinery, S.

Agronomy 302S, Farm Crops, S.

1:30—Agricultural Engineering 204S, Farm Machinery, Th.

Agronomy 302S, Farm Crops, Th.

Biology 102S, General Botany, daily, except Saturday.

Electrical Engineering 202S, Elementary Electrical Engineering, daily, except Saturday.

Vocational Teaching 311S, Job Analysis, T., Th.

2:30—Agricultural Engineering 204S, Farm Machinery, Th.

Agronomy 302S, Farm Crops, Th.

Biology 102S, General Botany, daily, except Saturday.

Electrical Engineering 202S, Elementary Electrical Engineering, daily, except Saturday.

Vocational Teaching 311S, Job Analysis, T., Th.

Vocational Teaching 421S, Class Room Organization and Management, M., W.

Vocational Teaching 417S, Lesson Planning and Methods of Teaching Industrial Arts, M.

3:30—Agricultural Engineering 314S, Tractors, daily except Saturday.

Chemistry 102S, Inorganic Chemistry, M., T., W., Th.

Chemistry 309S, Agricultural Chemistry, M., T., W., Th.

Vocational Teaching 311S, Job Analysis, T.

Vocational Teaching 417S, Lesson Planning and Methods of Teaching Industrial Arts, M., W.

Vocational Teaching 421S, Class Room Organization and Management, M., W.

4:30—Agricultural Engineering 314S, Tractors, daily, except Saturday.

Chemistry 102S, Inorganic Chemistry, M., T., W., Th.

Chemistry 309S, Agricultural Chemistry, M., T., W., Th.

Vocational Teaching 417S, Lesson Planning and Methods of Teaching Industrial Arts, M., W.

Vocational Teaching 421S, Class Room Organization and Management, M.

The time for the courses in Drawing, and for Veterinary Medicine and Surgery 372S, Clinics, will be arranged when the courses are asked for.

THE SCHOOL OF COTTON CLASSING.

(June 11 to July 21).

The object of the School of Cotton Classing is to prepare young men for cotton buying and the managing of cotton warehouses, and to offer to farmers the opportunity of increasing their knowledge of the leading farm product of Texas.

A study is made of the elements which determine the commercial grades of cotton; the influence which affects the price of cotton; the system of financing the crop from field to factory, and the relation of exchanges to the business in general. Each class is furnished with new samples for practice and the work is patterned after that of a cotton office. The samples used in the Summer School are obtained from the cotton states west of the Mississippi River and an effort is made to familiarize the student with the different characteristics of cotton grown in the southwest.

Special attention will be paid to the staple of cotton, and experts in this branch will give instruction in this subject. Many samples of various lengths of staple will be provided for students taking up this line of work.

The government standards for classing cotton, which have been adopted by all the exchanges, will be used.

The announcement giving complete details relative to the work of this division will be ready for distribution March 1, 1923, and can be secured by addressing Professor J. B. Bagley, College Station, Texas.

THE SCHOOL OF GRAIN GRADING.

(June 11 to July 21).

The School of Grain Grading has been established for the purpose of giving detailed instruction in the matter of grading grains according to the Federal standards established by the recent Grain Standards Act. This act was approved August 11, 1916, and its purpose is to provide for the establishment of a single set of standards of quality and condition for the various grains, and to provide for their uniform application to the shipments of grain by grade in interstate and foreign commerce. The act specifically prohibits the use of any other grades whatsoever for any grain which comes under its requirements. To enforce the provisions of this act and to supervise the inspection of grain, in order that the Federal grades may be uniformly and properly applied, a Federal Grain Supervision service has been created in the Bureau of Markets of the United States Department of Agriculture. In carrying out the provisions of this service the actual inspection and grading of grain is done by inspectors licensed for that purpose. In Texas these inspectors are licensed by the State Commissioner of Markets and Warehouses. In order to secure such a license it is necessary that the applicant first pass a satisfactory examination before a State board of examiners for grain graders, which board is appointed by the Commissioner of Markets and Warehouses of the State of Texas. This examination is held in accordance with the Federal Grain standards act and the like standards of the Markets and Warehouse Department of the State of Texas. It is the plan of the Department of Markets and Warehouses to have a large number of people in the grain growing belt of this State prepare themselves for the classing and grading of grain. One of the important objects of the Grain Grading School is to prepare persons who desire to enter this field of work for the examination mentioned above.

Again, the use of the Federal standards in the grain markets has stimulated a desire among grain farmers and grain dealers to gain a knowledge of the methods of applying the standards. This knowledge will enable the farmer to know when his grain is being graded at the country mill or elevator, that it is being done properly. These facts, together with the generally increased interest in the last few years in marketing of farm products, has

greatly increased the demands made on the agricultural colleges for information on the market grading of grains.

The work of the Grain Grading School will cover, in detail the grading of wheat, corn (both in the ear and shelled), oats, rice, and the grain sorghums (both in the head and threshed grain). No Federal standard has been established for the grain sorghums. However, the State Commissioner of Markets and Warehouses has recently established standards for the grading of grain sorghums, and the work of this school relative to grain sorghums, will be given in accordance with the standards fixed by the Commissioner of Markets and Warehouses.

The services of a capable and experienced grain grader will be secured for giving the work of this school. The instruction will consist of both lectures and laboratory exercises.

The course of lectures will be confined, in the main, to the following topics:

- I. History leading up to the passing of the Grain Standards Act.
- II. United States Grain Standards Act
 - A. Date passed.
 - B. Value in foreign trade.
 - C. Value in interstate trade.
 - D. Indirect effect upon intrastate and local trade.
 - E. How the farmer is affected.
 - F. Classifications and grades provided by the Federal standards.
 1. For wheat.
 - a. Classes, subclasses, and grades. (As shown by charts put out by the Bureau of Markets).
 - b. Wheat districts (shown by map).
 - c. Descriptions of the six market classes of wheat (both threshed and head samples of each class exhibited).
District where grown.
Texture.
Color.
Milling quality.
 2. For Corn.
 - a. Classes and grades (as shown by charts).
 3. For oats.
 - a. Classes and grades (as shown by charts).
 - G. The organization to carry out the provisions of the act.
 1. The licensed inspector.
 - a. Qualifications of the inspector.
 - b. Duties.
 - c. How he obtains his license and his relation to the Federal government.
 - d. Rules and regulations governing the inspector.

2. The district supervisor.
 - a. Division of United States into supervision districts (shown by map).
 - b. Qualifications of the supervisor.
 - c. Duties.
 - d. How to use the supervisor's office.
How to take an appeal.
How to take a dispute.
Definition of terms used in connection with appeals and disputes.
3. The board of review.
 - a. Location.
 - b. Duties.
4. Secretary of Agriculture.
 - a. Relation to the inspection and grading work.
5. Relations between inspectors, supervisors, board of review, and Secretary of Agriculture. (Explained by use of diagram on blackboard).

III. Bases upon which the grain grades are established.

In this part of the course the students are assigned references to report on and discuss before class. The references used are listed below in about the order in which they are to be taken up by the class:

1. U. S. Dept. Agr. Bul. 328, Milling and baking tests of wheat containing admixtures of rye, corn, cockle, kinghead and vetch.
2. U. S. Dept. Agr., Plant Indus. Bul. 100, Garlicky wheat.
3. Ind. Agr. Expt. Sta. Bul. 176, Wild garlic and its eradication.
4. U. S. Dept. Agr. Farmers' Bul. 610, Wild onion; Methods of eradication.
5. U. S. Dept. Agr. Bul. 455, The drying for milling purposes of damp and garlicky wheat.
6. U. S. Dept. Agr. Farmers' Bul. 919, Methods of handling dockage.
7. U. S. Dept. Agr. Bul. 557, A comparison of several classes of American wheats and consideration of some factors influencing quality.
8. Bureau of Markets Service and Regulatory Announcements 54. How hard red winter wheat is grading under Federal standards.
9. U. S. Dept. Agr. Bul. 788, Moisture in wheat and mill products.
10. U. S. Dept. Agr. Bul. 751, Experiments in the digestibility of wheat bran in a diet without wheat flour.
11. Utah Agr. Expt. Sta. Bul. 103, Milling qualities of wheat.
12. Canadian Dept. Agr. Bul. 57, Quality of wheat.

13. U. S. Dept. Agr. Bul. 48, The shrinkage of corn while in cars in transit.
 14. U. S. Dept. Agr. Bul. 725, A preliminary study of the bleaching of oats with sulphur dioxide.
 15. U. S. Dept. Agr. Bul. Plant Indus. Cir. 74, The sulphur bleaching of commercial oats and barley.
- IV. Laboratory Practice.

A large number of samples of the different grains are obtained from various sources, such as the local experiment station, feed stores, and farmers of the State, and assigned to the students. The first laboratory period is used in demonstrating the use of the grain probe in obtaining samples and the apparatus used in grading, and in discussing various phases of the different operations. In the following laboratory periods the students are furnished with direction sheets to be followed in grading the assigned samples, and with the use of the small handbook, "Official Grain Standards," and type samples, the students are able to go ahead with a reasonable amount of help from the instructor.

The following directions for grading wheat will give an idea of the general procedure followed in grading all of the different sorts of grain:

Directions for Grading Wheat.

1. Give your sample a laboratory number.
2. Make moisture test using sample contained in air-tight can. For all other determinations use that portion of the sample contained in the cloth bag.
3. Determine odor, onion, garlic, and live weevils or other insects injurious to stored grain.
4. Divide sample down to about 1000 grams.
5. Determine dockage using the 1000 gram sample.
6. Determine test weight per bushel using the dockage free wheat obtained in 5.
7. Divide the sample down to three portions—A, B, and C—containing 25 to 65 grams each.
8. Using portion A, determine the class and subclass into which the sample should be placed by analyzing for color and texture.
9. Using portion B, determine wheats of other classes.
10. Using portion C, determine damaged kernels (total and heat damaged) and foreign material (total and other than cereal grains).

Report of Wheat Grading Test.

Sample No			
Per cent moisture.....			
Odor.....			
Per cent dockage			
Weight per bushel			
Class			
Sub Class			
Per cent wheats of other classes.....			
Percent damaged kernels {	Total.....		
	Heat damaged.....		
Per cent foreign material {	Total.....		
	Other than cereals.....		
Grade.....			
Remarks.....			

A somewhat similar study is made of corn (both in the ear and shelled), oats, rice, and the grain sorghums (both in the head and the threshed grain).

EIGHT WEEKS' COURSE IN AUTOMOBILES AND TRACTORS.

General Statement.

The Eight Weeks' Automobile and Tractor Course offered by the Agricultural Engineering Department of the Agricultural and Mechanical College of Texas has been established for the following well-defined purposes:

1. To provide the power farmer an opportunity to increase his knowledge of the gas engine, tractor and automobile by systematic study, thus enabling him to obtain maximum efficiency at minimum expense.

2. To give the boy or man wishing to enter the automotive industry as a manager, salesman, demonstrator or mechanic a short course in the fundamental mechanics of that industry.

3. To afford the general public interested in automotive mechanics an opportunity to get a short course in this subject.

From all these sources the demand is the same—better mechanics. More finely constructed machines of all kinds are being built to obtain the maximum efficiency. Therefore, it is necessary for the operators to be more skillful in their work if the machines are to function properly. The annual loss due to inefficient operation is very great and can only be eliminated by properly trained men. To meet this demand for information the Eight Weeks' Tractor and Automobile Course was established four years ago during which time hundreds of men have been successfully trained in the work and have gone out to take up positions as mechanics, operators of trucks, tractors, and gas engines, salesmen and managers.

Outline of Regular Course.

The Automobile and Tractor Short Course is divided into eight parts of one week each and so arranged that each succeeding week carries the student further along in the study of auto-mechanics. The work of each week has been very carefully outlined and such work that is not essential has been eliminated, leaving only material of vital importance in the course. Follow is given a brief outline of what is given in each week's work.

Metal Working Department.

In the metal working department the making of various parts of automobiles and tractors out of iron, steel, brass, alu-

minum, etc., is taken up as well as the repairing of these same pieces. The making of such special tools as a mechanic may need is also considered and the student gets first-hand information by making cold chisels, punches, off-set screw drivers, etc. The tempering of these tools is an important factor and the student is required to see that the tools he makes are properly tempered.

Soldering of various metals is done by the student in his laboratory work. Welding not only with the openfire is given but also with oxygen-acetylene torch.

Chassis Department.

The work in the chassis department consists in getting familiar with the different parts of the chassis of automobiles and tractors, such as the wheels, springs, differential, frame, transmission clutch, etc. The student studies the various types of these different parts and gets not only familiar with what they look like but also their repair and adjustment.

Gas Engine Department.

The work in the gas engine department is for the purpose of getting the student familiar with the single cylinder gas engine such as is found on the farm. No course in auto-mechanics would be complete without having had work in this vital department. While the theory underlying the operation of these engines is the same as any other gas engine, it is essential that the student become familiar with the practical application of these theories. The work of this department takes up in detail the various methods of cooling, governing, igniting and mixing the gas as found on farm gas engines.

Motor Department.

In the motor department the student is taught the care and operation of multiple cylinder engines. He not only is taught how to properly operate the multiple cylinder, but also to properly disassemble and reassemble four, six, and eight cylinder engines under expert supervision. In disassembling these motors the student becomes familiar with the different parts of the motor and how they are put together. He also learns how to properly grind a valve; pour, scrape and fit a bearing; fit a piston with piston rings; and time valves.

Electrical Department.

In the electrical department the student studies ignition, which is the principle of electricity as applied to the ignition of the internal combustion engine. The student spends two weeks in this department, the first week of which is taken up with a

study of elementary electricity and its application of coils, magnetos, distributors, spark plugs; all of which are found on ignition systems of autos and trucks. Special attention is given to the magneto; its operation, care, and repair. During the second week in this department the student takes up work along the same line as that given in the previous week with special emphasis being placed on the details of ignition timing. Starting and lighting systems connected to the ignition system of various standard makes are arranged on special stands which allow the student to see just the electrical part of the car.

Tractor Department.

The work of the tractor department takes up the difference in design, methods of operation and construction, together with the care and repair of the various makes and sizes of tractors on the market today. The student gets an opportunity to operate the various tractors found in the laboratory.

Trouble Shooting Department.

The work in the trouble shooting department allows the student to use all the information and skill that he has gained in the previous weeks by solving motor troubles. Here the instructor puts the motor in trouble by causing to occur some irregularity which is liable to happen under ordinary conditions. It is the student's problem to discover the cause of the trouble and to remedy it. He thus becomes familiar with the troubles to be found in motors.

ADVANCED COURSES.

In addition to the regular eight week's course, three advanced courses are offered to those who successfully complete the eight weeks' course. These advanced courses may be of four or eight weeks duration, depending upon the students wishes. The mission of these courses is to carry the student further along some special line as it is realized that in the regular eight weeks' course not sufficient time is available for those wishing to become specialists in any one subject.

When Courses Start.

Courses start as follows: March 7, 14, 21; May 2, 9, 16; June 20, 27.

Who May Enter Course.

In order to enter this course the student must be eighteen or more years old, and must present a certificate from some reliable person showing that he is in good standing in his community.

For the courses starting May 16, and June 20, and 27, students sixteen years old will be allowed to attend.

Cost of Course.

Incidental Fee	\$10.00
For sundry expenses, such as printed forms, examination books, etc.	
Medical Fee	2.50
For the services of the College Surgeon and Hospital Staff who are at the service of the student.	
Maintenance Fee	64.00
For board, fuel, laundry, light, room rent, bedstead, mattress, table and chair.	
Laboratory Fee	50.00
For cost of instruction.	
Total	<hr/> \$126.50
Trust Fund	\$10.00
This trust fund is required of each student as a deposit for his books and tools. It is refunded to him after the completion of the course if the books and tools are returned.	

CERTIFICATE.

If the student's work is satisfactory, he is given a certificate showing that this is the case. These certificates are granted only to those who pass and complete the course. Should a student fail to pass, he is allowed to take the course again, provided his instructors think he will not be wasting his time, but he must pay the same fees for the second course as he did for the first.

THE FARM BOYS' DIVISION.

(July 2 to July 28).

The object of this course is to offer to boys not under fourteen or over eighteen years of age, elementary, but practical courses in subjects relating to farm life.

For several years there has been growing throughout the State, a feeling that our farm boys should be given better opportunities for securing special training in agricultural and farm-life subjects. A great majority of these boys have not had access to schools of sufficient grade to enable them to enter college courses, and it is to meet their needs for practical instruction in agriculture that the Farm Boys' Division has been added to the work of the Summer Session.

Courses will be given covering the important divisions of agriculture as follows:

Agricultural Engineering. (1-4).

This work will consist of practical demonstration relative to the use of farm tractors, gasoline engines, farm machinery, the construction of farm terraces, belt lacing, and rope tying.

Agronomy. (1-4).

This course includes practical demonstrations and lectures covering the important methods of tillage, use of fertilizers and manures, crop rotation, and seed selection.

Animal Husbandry. (1-8).

A general course briefly covering the various phases of beef cattle, horses, hogs, and sheep production, including judging, feeding, and management.

Dairy Husbandry. (1-4).

This course will be devoted to the judging, feeding, breeding, care and management of dairy cattle, and the care and handling of dairy products.

Horticulture. (1-4).

The theory periods of this course will be devoted to discussions of the fundamental principles underlying:

1. The propagation of plants by seeds, cuttings, budding, and grafting.

2. Orchardring, including laying out of orchard lands and the planting and care of the orchard.

3. Vegetable gardening, including preparation of the land, construction of cold frames and hotbeds, fertilizers, and preparing vegetables for market.

The practice will be devoted to practical work in making cuttings, budding, and grafting; in laying out orchards, pruning, and spraying; in mixing and applying fertilizers.

Poultry Husbandry. (1-6).

The work in poultry husbandry will include a study of the important phases of the industry as it applies to conditions on the farms of the State. Considerable time will be devoted to breeding, feeding, housing, sanitation, incubation, brooding, judging, and marketing.

The practice work will consist of the study of breeds and types, candling and grading eggs, killing, dressing, and marketing poultry.

These courses will be given in accordance with the following schedule:

7:30—Horticulture, T., Th., S.

8:30—Horticulture, Th, S.

Poultry, M., T., W., F.

9:30—Poultry, T., W., F.

10:30—Agricultural Engineering, M., W., F.

Dairy Husbandry, T., Th., S.

11:30—Agricultural Engineering, W., F.

Dairy Husbandry, T., Th.

1:30—Agronomy, T., Th., F.

2:30—Agronomy, T., Th.

3:30—Animal Husbandry, M., T., W., Th., F.

4:30—Animal Husbandry, T., W., Th., F.

COUNTRY MINISTERS' AND COUNTY EDITORS' CONFERENCE.

(July 16 to July 28).

Where the country church and the county press are measuring up to their opportunities and responsibilities the areas which they serve tend to have good educational conditions, the best agricultural practices, good marketing conditions, good health conditions, and successful organizations,—in a word, satisfactory community life. In the areas where these two institutions do not live up to their potentialities, the chances are, the reverse of the above conditions prevail. Furthermore, the efforts of the county and home agents, the county superintendents of schools, and other public servants are severely handicapped. The efforts of all types of organizations are also greatly handicapped.

In order for the country church and the county paper to live up to their potentialities two things are necessary:

First, those responsible for these institutions must have a good knowledge of the forces affecting country life.

Second, they must have definite objectives toward which to work.

Recognizing the fundamental importance of the country church and the county press, the A. and M. College has long desired to give aid to those engaged in such work, and to help them prepare themselves for the greatest possible service in their respective fields.

To this end, it will hold, for the first time, from July 16 to July 28, a Country Ministers' and County Editors' Conference, or Short Course.

This course will include two parts: (1), five days of intensive study of the rural situation, especially in its more social aspects, and including particular consideration of the special problems of the country minister and county editor; and (2), five days devoted to work of a more general nature, including a survey of all the various lines of activity carried on by the Agricultural College. This second five days' program will be in connection with the program of the Farmers' Short Course.

The outline of topics for the first five days will be as follows:

I.

Factors Affecting Country Life.

1. Analysis of the forces and influences molding the country dweller.

2. Country life conditions and trends in United States and in Texas.
3. Agencies working on country life problems.
4. The need of trained leadership and means of developing it.
5. Means of promoting desirable conditions and trends and of checking undesirable ones.
6. Means of promoting desirable conditions (Con'd.).

II.

Country Church Problems.

1. Country church conditions and tendencies.
2. Responsibilities and relationship of the country church toward community problems and conditions.
3. Means of relating the church to community life.
4. Agencies with which country churches can co-operate.
5. Analysis of the work of successful country churches.
6. A constructive country church program.

III.

Making a Live County Paper.

1. Functions of the county paper.
2. The relation of the county paper to public opinion in its circulation area.
3. Making the county paper a necessity.
4. Untapped news sources for county papers.
5. Covering the field.
6. A constructive program for the county press.

Course number one, "Factors Affecting Country Life," will be accompanied by two hours per day of laboratory work.

In addition to these three courses, there will be daily conferences and a series of evening lectures by men of national reputation.

In the program of the Farmers' Short Course which is given on page 69, there will be special lectures and conferences devoted to the particular interests and problems of rural ministers and county editors.

These courses will be of material assistance to secretaries of the County Farm Bureau and secretaries of Chambers of Commerce.

Expenses.

There are no fees for taking this course, except the charge for room and board. This amounts to eight dollars a week.

For more detail information concerning the program of the Rural Ministers' and County Editors' Short Course, write to the Department of Rural Sociology, College Station, Texas.

SHORT COURSE FOR GRADUATE VETERINARIANS.

(July 16 to 21).

This course is planned to provide opportunities for veterinarians to become more familiar with problems which their particular line of work or kind of practice up to this time, has not presented.

Some of the newer and more dependable methods of diagnosis will be considered.

Character of Work.

Lectures, practice periods, laboratory work and clinics will be offered in poultry diseases, practical microscopy, diseases of small animals, diseases of the reproductive organs, animal breeding, feeds and feeding, medicine and surgery.

Entertainment.

The evenings will be used for round table discussions, moving pictures of an educational and entertaining nature, and lectures. Ample facilities for bathing, playing tennis and golf are available.

Expenses.

The only charges for this course are for board and room. Meals will be provided for \$1.25 a day and a charge of fifty cents a day will be made for lodging.

THE FARMERS' SHORT COURSE.

(July 23 to July 28).

This course is planned to meet the needs of men and women who desire to farm on a better basis, and to make farming more profitable, and to make farm life more comfortable and attractive.

The teaching staff of the Farmers' Short Course will be composed of officers from the teaching division, the Experiment Station and the Extension Service of the College. There will also be several out-of-state speakers of national reputation.

Character of Work.

1. *Agriculture*.—Separate courses will be offered in the following departments: Agricultural Education, Agricultural Engineering, Agronomy, Animal Husbandry, Dairy Husbandry, Horticulture, Poultry, Plant Diseases, and Insects, and Veterinary Medicine.

2. *Home Economics*.—A special course in Home Economics will be offered to girls and women. The work will consist of lectures and demonstrations in cooking, canning, basket making, and household art. A special feature of this course will be the Canning Club Contest for the Farm and Ranch Loving Cup.

3. *Course for Boys*.—A special course will be offered for boys. The work will be given in judging live stock, farm machinery, gas engines, tractors, budding and grafting of plants, and the like. A special feature of this course will be the Live Stock Judging Contest for the Progressive Farmer's Loving Cup.

Entertainment.

It is the desire of the College authorities that the Short Course offer the people who attend an opportunity to secure valuable information and at the same time refreshing and wholesome entertainment. The evenings will be given over principally to motion pictures and musicales, and a part of each day will be set aside for special forms of entertainment, including the annual reception to women and girls, crowning of the Canning Club Queen, bathing parties, baseball games, etc.

For illustrated announcement, giving full information in regard to the Farmers' Short Course, write Dean E. J. Kyle.

Meetings Held at College During Farmers' Short Course Week.

Director T. O. Walton of the Extension Service, has issued a call for all employees of the Extension Service, including County and Home Demonstration Agents, to meet at College during Short Course week.

The Officials of the College extend an invitation to all farmer's organizations of the state to hold their annual meetings at College during Short Course week.

SHORT COURSE FOR ELECTRIC METERMEN.

(June 11 to 15).

The object of this course is to give intensive instruction covering the principles of operation, the calibration and methods of repair of electric meters.

While this course is of special interest to employees of those central stations which do not find it possible to provide training for the members of their meter departments, it is of value to any one interested in the testing, adjusting or installing of electric meters.

The instruction is given in the form of lectures, demonstrations and individual laboratory work, and covers the fundamentals of electric circuits and the principles underlying the operation of electric meters.

Two courses are given; one dealing with the more elementary principles of electricity and the single phase meter, and the other for more advanced men will cover polyphase meters.

A more detailed announcement may be obtained by addressing Professor F. C. Bolton, College Station, Texas.

